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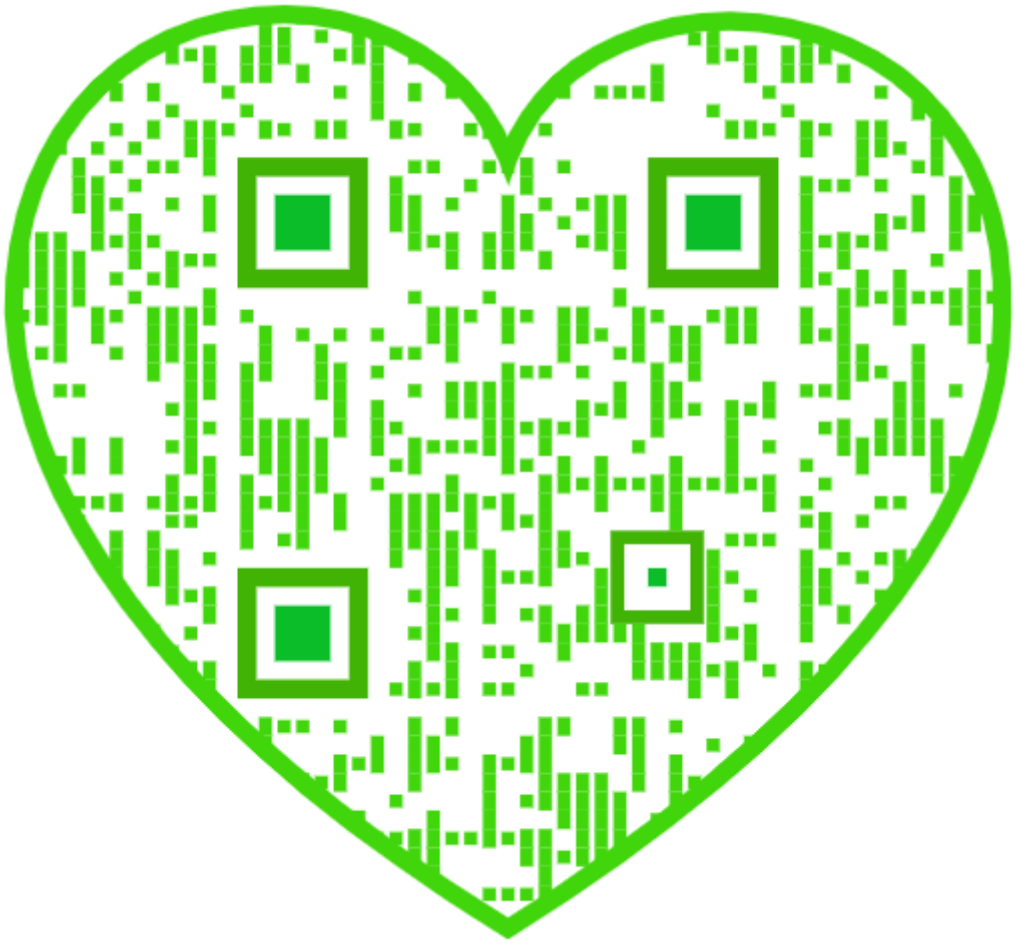

The American Apiculturist.

A Journal devoted to practical Beekeeping.

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For the American Apiculturist.

IN-BREEDING.

DR. G. L. TINKER.

FROM the answers given to query No. 38 in the November issue of the APICULTURIST, by a number of our ablest writers, it would seem that I stand almost alone in my views on this subject. However, it is evident that we have much to learn yet; that, as Mr. Alley so well states, it is "a question that upsets all hands." That its proper solution will have a vast influence in developing the best bees of the future I am fully persuaded, and everything bearing on this topic should be of interest.

In developing a new strain of bees I have for the past five years devoted special attention to the effects of in-breeding and have studied the matter in all its bearings. I have had many queens mated to brother drones of which I have been certain; so also I have had queen daughters mated to the parental drones (which latter is the worst possible cross) and in all cases have carefully noted results, and particularly the subsequent crosses in this line. Hence, I shall give my views with some degree of confidence in my conclusions.

In the first place it is plain that the objects sought in breeding a superior bee are not of the same nature as those sought in improving cattle and horses and other farm stock. It is true we may develop larger bees with slight modifications in form and color; but, after all, the real objects sought are prolificness of queens, vital endurance and energetic working quality of the workers. The subject of prolificness, I believe, has not been so great a consideration in developing other farm stock, neither have vital endurance and activity been studied except in breeding the race horse. Here, every point of advantage has been well studied. Still they are not applicable to the honey bee. We shall hardly be able to study muscular development in the honey bee in connection with form to any great extent as has been done with the race horse. We shall have to base all conclusions largely upon the comparative results noted in colonies and breed accordingly.

It has been said that so far as results are concerned, the bees of the present day are no better than those of a thousand years ago. This fact, if it be truly a fact, is rather discouraging, yet every other creature that man has made an effort to improve he has improved, and there is no question but that substantial improvement may be made in the honey bee. It is safe

to assume that the reason we have failed is because we have had no control over the mating of queens and drones. It has not only been haphazard mating, but every form of in-breeding has gone on uninterruptedly. The wonder is that the bee of the present time has not degenerated from the good old stock of a thousand years ago. Now I shall assert that what is true of the human race and of the higher animals is also true as applied to the honey bee. In-and-in breeding is productive of evil in the animal and vegetable kingdoms throughout and there are no exceptions to the general rules anywhere. A single cross of near relatives is productive of little mischief; it is the repeated crosses of near relatives that cause evil. In early times we have many recorded instances of the union of near relatives in marriage. Moses was a son of a brother and sister, but by him came the law doing away with the intermarrying of near relatives. Thus, the evils of the practice were early perceived and they were abated for the benefit of the race. Barrenness was one of the notable results.

In the vegetable kingdom, the universality of the law against the uniting of near relatives is made manifest in non-productiveness, and it has long been one of the most potent arguments of beekeepers in the interest of the honey bee that it was one of the chief agents in effecting the cross-fertilization of flowers, thus aiding directly in promoting the productiveness of all kinds of fruit trees. I shall make the point that everywhere in nature the highest order of fertility is where cross-fertilization is possible. In other words, hermaphrodite generation is opposed to great productiveness wherever found. The uniting of brother and sister is a form of hermaphrodite generation and the disposition, as we have seen, is toward barrenness.

My experience with queens mated to nearly related drones is that the prolificness is impaired, and continued in-breeding results in queens that are wholly worthless to the practical beekeeper. On the contrary, every radical cross and every queen mated to an unrelated drone has been normally prolific and many of them remarkably so. In addition to this fact the working quality is perceptibly augmented. It has also appeared that the workers were longer lived, showing greater vitality. I think we shall find that the impairment of vitality from too close breeding will be manifest, not in sickly bees, but in comparatively short-lived bees. The farther we pursue this line of investigation, the more we shall find to convince us that the greatest success in our efforts to improve the honey bee both as to the prolificness of queens and the vigor and working qualities of the workers will be where we make crosses of the best unrelated queens and drones. If, in addition to this, we make individual selection we shall be certain of success and the "coming bee" will soon be in the range of possibility.

A plan to this end has already been inaugurated by D. A. Jones, G. M. Doolittle, Abbott L. Swinson and myself in sending out virgin queens to be mated in distant apiaries. Surely, there will be no mistake in getting queens mated to unrelated drones by this method. Very satisfactory results the past season have already been noted by Mr. Doolittle from this practice.

From this time on, I think we shall see a great traffic in virgin queens, because queen breeders are loth to part with their best queens, and if daughters are mated in the home apiary it is not certain that

they will meet unrelated drones. By the new methods of queen-rearing we can rear from one queen almost any number of daughters and I would much rather have a fine virgin queen from a queen-breeder's best stock than a fertile queen to improve my own stock.

The idea advanced by Mr Demaree "that the drone is a son of his mother only and cannot be a full brother to a queen" will be found to be a great mistake as applied to fecundated queens. A drone can be "a son of his mother only," when she happens to be a virgin layer. To this extent only is Mr. D's statement true. I prefer to accept the views of Mr. Cheshire to those of Dr. Dzierzon in this matter. That there is an interchange of elements or properties of the spermatic fluid in the spermatheca of a laying queen affecting materially her drone progeny I have long held. And of this fact the more I see of the drones of cross-bred queens the more I am confirmed in this view. Prepotency, however, is extended from the male over the female offspring and from the female over the male offspring and this is a general law in heredity, but subject to many exceptions from unknown modifying agencies. Yet this proves nothing for the Dzierzon theory and I deny its truth except in so far as it relates to virgin queens. Even if the theory be true we should have a form of in-and-in breeding in all apiaries where the drones are unrestricted by perforated zinc that should be averted if we would secure the highest results in the breeding of superior bees.

New Philadelphia, Ohio.

For the American Apiculturist.

SHALL WE PLANT FOR HONEY?

A. C. TYRREL.

A NEW HONEY PLANT.

Mr. R. L. Taylor's article in Vol. V, No. 11, entitled "Shall we Plant for Honey?" may apply to his locality, but if he has travelled, he must have observed that there is a vast territory lying outside the boundary lines of Michigan.

There are millions of acres of rich prairie land naturally devoid of timber — honey-producing — such as he has cited. Hence, his remarks can apply only to a few favored locations and are calculated to mislead. A person residing in Michigan or New England cannot lay down a rule governing *all* parts of the world at large.

If Mr. T. had visited this part of Nebraska, Kansas, Colorado or Dakota last season, during the prevalence of the drought, he would not have indicted that article.

Shall we plant and wait until honey-producing trees yield sufficient nectar for our bees, or *cultivate* honey plants?

This question will admit of an affirmative answer only.

Note this misnomer: "Who may hope to win in a race with nature" in the production of honey plants he asks, as if the same infallible law of nature did not operate in the production of *all* honey plants, as well as those trees and shrubs that yield nectar? Wherein does the law of nature differ, as applied to the growth of white clover, asters, golden-rod and other autumn flowers, or summer blooming plants, as "Melissa," figwort, Chapman's honey plant? "We cannot compete with nature." Of course not. There can be no competition with

what is *already* produced in nature's realm, no more than Mr. T. can compete with *himself* in the sale of his products.

Did *man's* volition evolve, create or produce one honey plant?

Nature furnished man with legs as a means of locomotion, and horses, mules and oxen to haul heavy loads. According to Mr. T.'s analogy, we should not call to our assistance the steam engine or other motive powers to "*compete* with *nature*."

With equal propriety he might say to the resident pioneers of this prairie country, "Do not sow timothy or clover for your cattle, you cannot compete with nature in the production of the wild grasses which will furnish nutriment for your stock for all time, since timothy and clover succumb to drought." Do not break up the prairie sod and thereby pay a premium on malaria. Too many adhere tenaciously to preconceived opinions that cannot stand the test of actual experiment.

If we cannot compete with nature, why not at once discard movable frames and resort to the old-fashioned "gum," for we do not find them (frames) in nature's beehives—hollow logs and caves?

Why is it honey-plants continue to *bloom* long after basswood?

If they are detrimental to bees, why not wage a warfare of extermination on all such noxious weeds? "*If* " nothing was made in vain," you may rest assured that all plants that yield rich stores of nectar are just as valuable as basswood and other trees you mention, although blooming a month or two after the "flow from basswood ceases."

His position, "that a honey flow, after basswood is past, that merely conduces to an increased spread of brood is not very desirable," is not tenable.

I speak advisedly when I maintain that an "increased spread of brood" may not be feared, if there are sufficient stores at hand for all the occupants of the hive. Their instinct teaches them whether or not *increase* is desirable. In proof of this assertion I need only refer to reports of beekeepers all over the Union concerning the killing of drones early in the spring and the foresight of bees in not building queen cells and my bees were no exception. The same state of affairs existed here until the midsummer flow of honey from "Melissa."

White clover is easily killed by drought, and maples, basswood, willows, apples, etc., in most localities, failed to afford nectar in sufficient quantities to sustain bee life. My white and alsyke clover was killed early in the season, and had I not profited by past experience, would now report bees in a starving condition (unless fed), whereas they are strong and well supplied with honey gathered from *honey plants* I cultivated for their especial use and benefit.

I never wintered a colony too strong or lacking stores, although nearly all the honey was stored after July 10.

I have learned by experience that if there is an increased spread of brood late in the season pollen is stored to meet the demand. I have never known it to fail. I have noticed bees carrying in pollen as late as Oct. 4.

There is a honey plant called "Melissa" that is not affected by drought, excelling the best honey-producing trees, a profuse bloomer, a single plant putting forth 30,000 flowers, yielding an abundance of delicious honey when the flow from all other sources failed.

I shall cultivate five or six acres next season, *for it pays in this locality*, and is worthy of a fair trial

—even in Michigan—or other states where the drought prevailed to such an alarming extent.

Madison, Neb.

For the American Apiculturist.

PREVENTION OF INCREASE.

(NUMBER ONE.)

E. A. MORGAN.

PREVENTION of increase of *colonies* of bees, does not mean to prevent the increase of bees by any means, as this would be exactly opposite what we do to gain the best results, for no beemaster ever had too many bees in a hive.

Its object is to prevent swarming in a measure, but more especially increase in numbers of his colonies, which is always done at a loss of surplus honey and expense of new hives, combs and reducing the season's profit. My plan is no theory, but the result of five years' experience with one hundred colonies of bees.

It is as follows: As the preparation begins when bees are set out, I will begin with April 1. In the first place I will say I use the L. hive 16½ inches wide, allowing 1½ inches from centre to centre of combs; brood-frames 9 inches deep, thus it will be seen that I have a broad, shallow hive which I find the best, all things considered, for profitable beekeeping, and as I am a specialist at beekeeping, have been obliged to make it pay. I strive to keep queens that will fill ten combs with brood; this hive will certainly give room for the most prolific queens which, if crowded in a small hive are too willing to swarm out. Then again, if we contract too much, we shall crowd pollen into the sections. This size of hive obviated these troubles.

My belief is that the bees control swarming and that the queen is always opposed to swarming.

It is, therefore, the bees we must please. Knowing just what they require we may proceed to manipulate them to the best possible advantage.

First, then, in early spring, when set out, allow one day's flight for them to mark their location, then examine every colony, taking away all combs not densely covered with bees; then crowd with division-board, being sure they have abundant stores; cover up warm above and pack warm at sides of hives to hold the heat of cluster and hasten brood-rearing; leave entirely alone twenty-one days when young bees will begin to hatch; then examine once a week, adding the combs as fast as young bees emerge to cover them.

The combs should be added to outside of brood-nest, one at a time, as warm weather advances, until all are in. Young bees will now hatch as fast as the queen can fill the empty cells with eggs, the swarm is now a rousing one and the hive packed full of bees, brood in all stages, and honey (the old stores) mostly consumed.

It is now June 1; clover begins to yield and we see the combs begin to whiten. This is the proper time to place on a super filled with sections, having starters in them which will be taken possession of immediately, and honey will be stored rapidly, and if left in this condition swarming would be the result. We watch the super, however, and before it is quite full we raise it up and place an empty one under it, always adding extra room before quite needed, and if the hive is standing in the sun a shade-board is placed upon it. Managed in this way throughout the season

swarming is scarcely ever thought of, and not one colony in twenty-five will cast a swarm, as all the energy of the bees is bent upon honey gathering. The strength of swarm is kept up by the queen having all the room she can fill; consequently, the white honey all goes into sections.

But should a swarm issue we proceed at once to profit by it and hive them so that no time is lost for work in the sections. This we accomplish as follows: as soon as all the bees are in the air, we turn the hive clear around so that it faces the opposite direction from what it did; setting it just off the stand.

We now place a new hive on the same stand as the old one occupied and put seven combs or frames with foundation in it. Take three combs of brood from old hive and put in also; then place the super, or supers, as the case may be, on the new hive, and hive the swarm back in it, letting the old hive remain until towards evening. At that time all the flying force will be back in the new hive on the old stand. Now open old hive and shake and brush all remaining bees down in front of new hive, when they will all run in. We now have all the bees of the swarm and all left in old hive on new stand. That colony is now done with swarming for the season. There is a strong field force, no combs to build or supers of unfinished sections to fill up. The bees have gained a new impetus by swarming and the work goes on rapidly; no loss of time, no increase and a double surplus will be taken.

We now return to the old hive, which is taken into honey house, queen cells cut out, honey extracted, and the brood given to stocks not overflowing with bees, to nucleus, or to artificial increase (if we wish such) or still better, held over till next day and a swarm hived on them and treated the same as was the one the day before, as regards *supers*, etc., and so on to the end of the season; when we find we have had half a dozen swarms, and yet only our one hundred stocks in the yard in the fall, the original number in the spring. Following up this method during the season, an extra yield of comb honey can be secured, fully as much, I believe, as of extracted. After July 10, the supers can be contracted to the close of the season, leaving few unfinished sections to carry over. These latter can be extracted and combs kept for the next year. Should I wish increase I should manage my apiary as above until after clover and basswood bloom, then divide and let them fill up on fall flowers.

Columbus, Wis.

For the American Apiculturist.

PREVENTION OF INCREASE.

(NUMBER TWO.)

JOHN H. RUPERT.

In preventing increase it is not necessary to prevent swarming; in fact, in working for comb honey, I prefer to have the bees swarm, as I think they work better after the swarming impulse is satisfied. When the time comes for putting on the sections look the hive over carefully, cut out all the queen cells, put on the supers and let them alone. If they go to work they will soon need more room. As soon as the first sections are finished take them off and replace with empty ones. With young queens this method will often prevent swarming, but when you put on the supers if they have made preparation for swarming let them

swarm ; do not cut out cells and fuss with them for they will not work while they are thinking about swarming. Have your new hive ready and as far as convenient from the old stand. As soon as the swarm issues, open the parent hive and remove all the combs but one to the new stand, bees and all, but be sure that you have *removed every queen cell*. Put in one frame of foundation to fill the hive ; take the super from the old hive and put it on the new one. By this time, the swarm will be settled in your hiving-box. Now carry them to the new hive and run them in, as you now have all the bees and brood of the old swarm (except the one comb left at the old stand and the bees that are out in the fields) ; the latter will work with all the energy of a new swarm. Be sure and put on the super before hiving the swarm and the bees will go into it with a rush and stay there. I never use any honey-board and am not troubled with the queen in the sections. I use the L. frame. If I used small frames and ten or twelve in a hive, I would leave two frames in the old hive instead of one. If they should swarm again in the course of two or three weeks treat them as before ; if they persist in swarming supersede the queen. As to the frame of brood left in the old hive, leave it alone till you have bees enough to fill a hive ; then unite the colony at sundown, remove the empty hives, put on the super and the bees will go to work promptly. With this plan, you will have only one new swarm out from eight or ten old ones, and still have them in the best condition for storing surplus. I think they work with greater energy than when they are put back on the old stand.

Woodcock, Pa.

For the American Apiculturist.

THE PREVENTION OF INCREASE.

(NUMBER THREE.)

CHAS. SOLVESON.

In working for extracted honey, the prevention of increase is easily accomplished by a judicious management in tiering up and extracting. But when we come to the production of comb honey, no system of management has as yet succeeded in absolutely preventing increase. There are, however, different methods of manipulation that tend to decrease swarming ; but why try to entirely prevent swarming? Prevent it as far as is consistent with the largest amount of nice comb honey and then make use of the swarms *a la* Hutchinson and double up in the fall.

Of the different methods tending to prevent swarming, I will offer the following as being with me the most successful.

I use Heddon's sectional hive, but my system of management can be varied to suit the workings of any hive. We will imagine white clover in full bloom and a good colony of bees occupying two sections of the Heddon hive, with honey-board and one section case on, the latter being about half full of honey ; now lift off the section case and one of the brood-cases, and from the case now remaining take four of the frames having the least amount of brood, crowding two to each side of the hive of the four remaining, and in the centre place four frames having a foundation starter half an inch wide, readjust your hive, and in about three days they will be ready for another case of sections, and as soon as the four frames below become filled with comb cut it out with the exception of half an inch for a starter, and

replace them, making use of the comb removed to fill your sections. Thus by a judicious tiering of section cases and the removal of the comb in the four above-mentioned frames when about three-fourths full, not more than twelve per cent will swarm.

The four frames of brood and honey first removed can be tiered up on a few colonies and will be filled with nice stores for winter.

Nashatah, Wis.

For the American Apiculturist.

POULTRY RAISING IN CONNECTION WITH BEE-KEEPING.

What shall I do in connection with beekeeping that will not cause neglect, and at the same time be a source of profit? This question no doubt has been asked many times in the past, and will still be asked in the future as long as bees are kept. The answers are many; but I think that perhaps the one that is given about as often as any is poultry raising.

Nearly every one has some special work which he takes pride and pleasure in doing. If such work is the care of bees or poultry that person is sure to make a success of them. People will say Mr. So and So has luck with his bees or poultry, I wish I could have. There is no luck about it. If he did not *care* for them the very best he knew how, and when they *needed* it, his pets would not be the talk and perhaps envy of his neighbors.

Poultry raising is very similar to beekeeping in one respect at least. Without care and attention there will be no profit in either, but if properly looked after both pay well in the long run.

For early spring broilers I use an incubator to hatch and a brooder to raise; it is less work and not so much bother as with hens. Besides, it is hard work to make hens sit just when you wish; but with an incubator, put in the eggs, light the lamp and the hen is sitting without trouble. She always has the "fever."

It usually takes about ten weeks for a chick to weigh three-quarters of a pound. Some say it costs one cent a week for each chick from the time of hatching until ten weeks old. I think it costs some more than that.

With such prices as are paid in New York city for early chicks, there is a good margin left for profit after deducting all expenses.

Many have their first hatches come off in October or November, but these chicks are kept longer than ten weeks and weigh more than three-quarters of a pound. The highest prices for chicks that weigh three-quarters of a pound each are paid generally in March and April; after that prices decline and heavier chickens are wanted.

The greatest difficulty generally is to raise the chicks after they are hatched. There are exceptions, but with the improved machines for hatching, now offered, raising seems to be one drawback.

A person with good horse sense can build an incubator and brooder that will do good work, by getting some of the many directions and plans offered for sale. And by perseverance can be successful in raising early springers at from fifty to seventy-five cents per pound. There is plenty to learn the same as in all other special branches of work. But I think that a successful beekeeper stands a good chance to be a successful poultrykeeper.

[Will the author of the above kindly forward his address to the office of the Api.]

For the American Apiculturist.

DEVELOPING A HOME MARKET.

WILLIAM E. GOULD.

Perhaps there is little that I can say which will be of aid to the experienced beekeeper; but I state my views upon the matter with the hope that I may drop some thought which may benefit some of the beginners in this our chosen pursuit.

In a year like 1887, in some locations it might be advisable to ship our honey to a city market; but I have not found it so. To be sure, my crop was light, comparatively speaking (only 1450 lbs.); but there are 250 colonies of bees to supply our local market, and I, alone, could do nearly that, as far as the town is concerned.

Why not use extra exertions to dispose of our honey without hurrying it away to compete with others in a city market? I mean why not retail it ourselves? I find that my neighbors like honey as well as any one (I live in the country and my neighbors include all the farmers and laboring men for several miles around) and are not afraid to buy twenty five or fifty pounds at a time. I could easily have sold five crops like mine.

Honesty, good weight and *good honey* are the elements of success.

Situated as I am, I can often make honey take the place of money in hiring work done and in obtaining necessaries, such as wood, lumber for hives, etc. This saves the expense of marketing and the commission which must be given a dealer.

We cannot be too careful in preparing honey for sale. Every section should be *carefully* gone over and all propolis and stains removed. It pays to take time to do this well, even when it is to be sold to our neighbors. Were I to give a crate of honey away, I should want it to look as neat and attractive as possible—that is the best way to advertise.

In crating honey I think it poor policy to make it "gilt edged" in looks; that is, to put the best sections where they can be seen and the poorer ones out of sight. Let the sections next the glass be fair samples of the whole lot.

I have found extracted honey the most salable among the farmers. "*It is cheaper and goes farther*," they say. Don't try to sell honey too soon after it has been extracted, especially if part of it has been taken from uncapped combs. Should you do so, you will have an opportunity to regret it. At least I did when I first commenced the use of the extractor. Another thing, be sure to impress upon the mind of your customers that honey that candies is pure honey. Study your home market and seek to develop it first, last and all the time. If your customers come to you with grievances, try to satisfy them even if you do more than what is right. *It pays.*

Fremont, Mich.

For the American Apiculturist.

USE OR NON-USE OF FOUNDATION.

L. STACHELHAUSEN.

In the June API, 1884, page 97, I tried to explain why swarms should be hived on starters only, and I gave several different ways to make true swarms in an artificial way. Some years before that I hived swarms in the manner explained.

Since that time G. M. Doolittle and W. Z. Hutchinson have recommended hiving swarms on start-

ers only, and G. M. Doolittle has discovered the fact that bees full of honey and united to a swarm with a queen do not, as a rule, go back to the old home, quite in the same way as recommended by me in the ART, 1884.

But little attention has been given as yet to one point which I think very important. W. Z. Hutchinson's plan of hiving swarms is to use in the brood-chamber starters only in a limited number of frames and at the same time to give a case with sections, if possible, full of empty combs or foundation. The queen-excluding honey-board in such a case is a necessity, but is not essential to the principle. The bees are compelled to store all the honey in the cases, and it is claimed by this plan that more honey can be taken in the sections, but W. Z. Hutchinson does not claim, as a rule, to get more honey in all. This latter is not correct for all localities.

By our new ways of beekeeping we try too much to improve upon the instinct of the bees, and we manage many times against the proper instinct. One of their impulses is the building of comb, and if they are allowed to satisfy this impulse they will be stimulated to greater industry and energy, and this will continue for some time after the necessary combs are built. On the other hand, if we work against this impulse, the bees are dissatisfied and many times become discouraged and do not leave home at all. This has been my experience for many years, and generally the beekeeper has paid too little attention to this point.

To make use of this fact in the management of bees much depends on the location. In my locality swarms will issue or can be made by the middle of March and April, and while we have a moderate honey flow. The main season commences in the middle of May and lasts till end of June. I give a swarm, according to its size, five to ten frames with starters only and the foundation is not only built out long before the season commences, but the swarm too has gathered at least the same weight of honey as a swarm would if hived on empty combs: so the five or ten combs built from starters are clear profit, and there may be some honey too. If the five or ten frames are nearly built out, I give more frames with foundation or empty combs. Should a swarm issue just before or in the main season this method would be wrong (but with me at beginning of the main season all swarming is done and the bees never think of casting a swarm while the honey is pouring in *en masse*). Here I find Mr. Hutchinson's plan for comb honey in the right place. Now, the main thing is to give the bees plenty of empty cells to store the honey being gathered from the field, but of course the bees can build combs too, at this time with advantage.

It is important that you give a swarm no more frames than it can quickly fill to the bottom-bar. In this way only can you get good combs free of drone-cells. If once comb-building has stopped the bees will build more or less drone combs when they begin comb-building again. Later, if you want to enlarge the brood-nest, it would be a mistake to give starters, as foundation or empty combs should be given now. One or more frames with starters between brood or empty frames will give bad combs every time. Swarms of young bees having a young fertile queen build the nicest combs I ever saw, and I prefer them to combs of built-out foundation in every respect.

W. Z. Hutchinson says: "When bees are gathering honey in the

fields, there are times when they may build combs to advantage, but when they get their honey from a feeder, paradoxical as it may appear, they must have combs in which to store it, if the work is done at a profit."

This is exactly my experience, but I do not see any paradox in it. The bees need every time a certain number of pounds of honey to build a pound of comb (may be they get some at a side produce by feeding young larvæ, but I cannot prove this yet). But if they bring honey from the field and are allowed to build combs at the same time, the stimulated energy overbalances the loss of honey for comb-building. By feeding the bees the stimulated energy needed for building combs will cause a feeder to get empty sooner, but they cannot fill it again, and so the amount of honey used by the bees for comb-building appears at a loss.

In one of the bee periodicals a writer says, that "natural swarms only should be allowed to build combs; never made-up swarms." Why this? Have your made-up swarms under the same condition as in natural swarming, and it will build combs in the same way and to same advantage as natural swarms. Such has been my experience the past eight years. The so-called artificial swarming is unnatural, and, in fact, no swarms at all.

The impulse of building combs will arise in the spring, as soon as the weather is favorable and some honey is coming in. It is important to allow bees the satisfaction of this impulse. But now we meet with some difficulty, because at this time and in this condition the colony will build drone-combs mostly. In times of the old straw hive it was customary to cut away the combs under the brood in early spring, and Doctor Dzeirzon, too, recommended this, and thereby was the energy of the bees stimulated very much, resulting in more brood. The only trouble was, that the bees built drone-combs. But to-day we can give to the colony in springtime as soon as the weather is favorable, some foundation, and no drone combs can be built, but the bees can secrete wax because the foundation does not contain wax enough for building out the combs to their proper depths. For this I take out empty frames or those having honey in them in the spring and give foundation on the side of the brood (in our climate).

Further, the comb foundation is of great value in order to get as much honey as possible in a good honey flow. In sections we get more honey by full-size foundation than by starters, and still more, if it is possible to give empty combs in the sections. If the honey flow is not very good, the difference will be a very small one; the better the honey flow, the greater the difference. This is clear enough: the young bees cannot build the combs fast enough for storage room for the honey which the older bees are bringing from the field daily. So the foundation is of value, if we work for extracted honey and have not empty combs enough.

The question is not against the use of foundation at all, but to use it where it is to advantage and not to use it where it brings no profit but rather damage.

Selma, Texas.

For the American Apiculturist.

PLEURISY ROOT.

JOHN HASKINS.

PLEURISY root grows from two to two and a half feet high and be-

gins to bloom from the fifteenth of June and continues in bloom over two months. The bees work on it from morn till night whether the weather is wet or dry. This year has been the dryest season for twenty-seven years, I think; and still pleurisy root kept yielding honey right along, when nearly everything else that blossoms was dried up. Another thing in its favor is that if it rains ever so much it yields honey right along. It has been known here for fifteen or twenty years, and since I have taken notice of it, I never knew a year that it did not furnish honey in abundance. This cannot be said of any other honey plant that I am acquainted with. I consider that one good root of pleurisy will furnish honey daily for two hundred to five hundred bees. I would say as far as my observation goes, I know of no honey plant that can be compared with it, and if you wish it to bloom late in the season just cut it off before it gets through blooming. There is another peculiarity about it. It seems to furnish no pollen, and is rarely ever visited except by bees. I have once in a while seen bumble bees on it, but there is scarcely anything that works on it but honey bees. In answer to inquiries about the seed, I would say that what I planted this spring sprouted better than that I sowed in boxes in the winter; but as there seems to be such a tough covering around the seed, I think it would sprout much sooner if the seed was soaked in warm water. The seed looks much like that of the milk-weed, and has a wing or balloon attached to it, so when it gets ripe it flies away. The young plants may be planted between potato hills for the first season, 2 to 4 feet apart if the land is rich; if poor, they may be planted nearer; if a large plant grows in the same hill with the corn it seems not to hurt the latter any, or scarcely any. I would say right here I have no seed to sell this fall, and it is too late now to gather the seed; but I can furnish it in any amount another season, I think. I send you a few seeds in this letter for trial. I am ever so much obliged for the Journal you sent. I am well pleased with it.

Empire Prairie, Mo.

Mr. John W. Blodget, another beekeeper residing in Empire, Mo., sends the following concerning pleurisy root:

"I can endorse everything Mr. Heddon says of pleurisy root. I have found it in our corn fields and meadows. It does no damage nor harm in any land or to any crops. It is not hard to grow it here, as our soil is so rich; it seems to do well and thrive in our orchards as well as in waste places. I have seen as many as seven bees on one stalk, no matter how much clover and basswood there are, it is all the same and it seems to furnish nectar all day long."

I don't think we shall want any bee pasturage next year, as there will not be many bees left. The outlook for a good crop of honey next season never was more promising. I noted that where the drought killed the white clover and blue-grass roots the past season that the white clover has now started up again and is nearly as large as ever, so look out for one of the best honey years ever thought of.

I don't think there is one colony in ten that has sufficient stores to winter."

For the American Apiculturist.

A PURE SWEET.

J. H. LARRABEE.

To supply the demands of all the varying conditions of sixty millions of people, there are many occupations, trades and industries about which the majority are supremely ignorant. Apiculture is one of these. Long ago the natural appetite for sweets was supplied by honey alone. Within the last fifty years this appetite has brought the industry of cultivating the sugar cane and of manufacturing sugar to vast proportions. But the deleterious effects of sugar upon the digestive apparatus and kidneys have made it essential that some sweet should be provided which does not require to be "inverted." This is supplied by honey as honey is already inverted sugar and does not require that change in its passage through the system which may overburden the digestive organs thus causing dangerous disease.

Within twenty-five years the industry of honey production has risen from an occasional few swarms here and there in log gums or box-hives to the rank of a specialty.

The movable-comb hive was the first great invention enabling the interior of the hive to be kept under perfect control, its size contracted at will, the queen found, queen cells removed, and many other manipulations, known and understood only by beekeepers, performed.

Then followed the invention of comb foundation, which is a sheet of wax pressed full of small indentations to represent the bases of the cells as built by the bees. By this method straight combs were secured, and much valuable time saved to the bees, to be used for honey storage.

This thin sheet of wax pressed full of indentations is the cause of a great deal of injury to the beekeeping industry as stories of the manufacture of honey comb by machinery have carried with them a color of truth by the finding, by those ignorant of its true character, of a hard septum in the centre of the finest honey.

Following the comb foundation machine came the extractor or honey separator. By this means the honey is separated from the combs leaving the latter to be refilled by the bees. A framework with wire-cloth sides is rapidly revolved inside a large tin can and the uncapped honey expelled by centrifugal force. This machine was originally invented by a German but has been brought to perfection by Yankee ingenuity.

With the above named aids and an increased knowledge of the natural history of the bee and methods of management, is it to be wondered at that the industry is fast gaining ground? Let the producers of manufactured sugar beware, for the natural product of the little busy bee is much to be preferred both from a medical and epicurean standpoint, and, as will be seen from the following figures, is calling loudly and bidding well for popular use.

There are, it is said, over five million colonies of bees in the United States, and as we surely get an average of 25 pounds to the colony, 125,000,000 pounds of honey are annually consumed by the sweet-loving people. It is to be hoped that new inventions and an increased freedom from winter losses and disease will bring it within the bounds of possibility to produce honey at a fair profit below the cost of sugar. Then it will become a necessity as much as

the sugar of to-day; and the health of the race improved in proportion.

Larrabee's Point, Vt.

For the American Apiculturist.

PRODUCTION OF HONEY.

G. W. DEMAREE.

For about ten years I have produced honey on a large scale, though not in so great a quantity as some of our specialists in the business.

In all these years I have advocated the plan of taking honey both in and out of the comb. I presume that I have been influenced in this matter altogether by the *results* of good management. I have followed this course because it has paid me well to do so. It might not pay every honey producer to follow our plan, but in my opinion it would pay him if he would use the proper means to build up a home trade for his honey. All that is necessary to start a trade in honey *out of the comb* is to introduce the article to the tables of the people. This is best done by leaving samples at their houses. Many mistakes are made by extracting the honey before the bees have fully evaporated it, and sealed the combs. If you once sell a few pounds of honey that sours on the hands of your customers, your trade will be crippled seriously. If I have succeeded in building up a profitable honey trade, more from one cause than another, it is because I will not fill an order with anything but the very best article of honey that good management and good conditions will furnish. In the rainy year of 1882, nearly all of my honey crop was inferior in color and flavor, and was not as thick as it usually is. I sold none of that honey without explaining to my customers its inferior quality, and advising them to take but little of it, as I did not believe that it was sufficiently evaporated, owing to the wet season, to insure its saving qualities. By this straightforward course my trade was not injured in the least. "Honesty is the best policy," though it is a shame to be actuated by the lowest of motives. I knew a case where a large honey producer lost his reputation, injured himself and his brother bee-keepers by selling a fifty pound keg of honey that was so thin that it soured. It was sold to a groceryman who retailed it out, and it did its evil work effectually.

If all beginners in bee culture would follow the advice of Messrs. Dadant and Son, and others who have insisted on leaving the honey with the bees till it is thoroughly evaporated and the combs sealed, instead of following the "short cuts" advised by a number of writers on this subject, they would at least avoid being "stumbling blocks" to the bee business. There are a few experts who can generally evaporate their thin-taken honey, by artificial means, and make a "syrup" of it, but I hold that to preserve all the virgin purity and flavor of honey, taken from the comb, it should only be subjected to the open air just long enough to suffer the air bubbles to escape from it, when it should be closed up as tightly as possible.

Now I believe that the necessity that some people see for taking their honey as soon as the combs are filled, is brought about by a defect in their hive system. The deep hives, though suitable for brood-rearing, are not suitable for tiering up, and to wait for the bees to seal up the combs in a hive super or case that is too deep to be tiered to good advantage is a serious loss of time. Hence, the honey must be taken before it is properly

evaporated in order that the bees may not waste time while the honey is going through the process of completion.

To what extent the advice so universally and so innocently given, viz.: "Have all your combs of uniform depth, etc.," has injured the honey business I will not attempt to say. But I will say that under a proper system of hive construction there is no advantage whatever in having all the combs of uniform depth. All the brood combs should be exactly of the same dimensions, but the store combs should be just right to give the best results in the tiering system. The tiering cases should not be more than six inches in depth. At the most, the store comb frames should not be over six inches deep. I make my store comb frames only $4\frac{7}{8}$ inches deep in order that two of them will go into a ten inch extractor reel, side by side so that four frames are emptied at once.

My frames are adjusted in the cases so as to be immovable when the supports are in position that they may be handled in bulk. The store frames are worked $1\frac{1}{2}$ inches apart from centre to centre while the brood frames are kept but $1\frac{3}{8}$ inch from centre to centre. My favorite hive for all purposes is made as follows: The body is a plain box, the right size to take the standard "L" frame. The box is rabbeted so as to hang the frames just $\frac{3}{16}$ of an inch below the top of the hive. The brood-chamber sits on a rim bottom-board which is supported by four stakes, about two inches square, driven firmly into the ground. The brood-chambers are made to duplicate each other, and the store comb and section cases are the same in length and breadth as are the brood-chambers, so that they tier on the brood-chambers and on each other with a square joint. The quilts used are cut from twilled bagging just the size of the outer dimensions of the brood-chamber and cases.

The queen excluders are full sheets of perforated zinc with a rim $\frac{3}{16}$ of an inch above the plane of the zinc on both sides. The cover is a flat painted pine board cleated at both ends to prevent its warping. Each cover has a shade-board made of thin lumber and will turn water. I have hives that were painted ten years ago that are now in good condition by reason of the protection given by the shade-boards. They are indispensable in my apiary. Now let us see how my favorite hive works.

The brood-chamber sets on the rim of the bottom-board which has an elevation of $\frac{1}{2}$ inch above the plane of the board. The quilt covers the entire top of the brood-chamber, and an empty case rests on the brood-chamber. The edges of the quilt lapping between gives a close "packed" joint. The case is partly filled with a good absorbent and the whole is protected by the hive cover and the storm- and -shade board. With plenty of winter stores, this is the present status of my bees, and is what I call "winter quarters." Were I situated farther north the hives would be packed at their sides also, but that is not necessary here. When warm weather makes its appearance in the early spring the absorbents are removed and sheets of paper are spread over the quilts to prevent the heat escaping at the top of the brood-nest, and the packing is returned. If the bees have plenty of stores nothing more is done to them till the time arrives to adjust the surplus cases.

The weather being warm and the honey harvest at hand the absorbents are removed and the queen excluder is placed on top of the brood-chamber, and on its rim, is set the section case — if comb

honey is the object — and the quilt now goes on top of the section case, then the hive cover and shade-board. Some beekeepers do not use a quilt over the sections, but I do, and to great advantage, I think. In very hot weather the hive cover can be wedged up so that the air can pass over the quilt and relieve the sufferings of the bees, and at the same time the quilt keeps them in their proper place, and excludes robbers. When honey is to be taken with the extractor, full sized supers the same as the brood-chamber may be used, or the half depth store cases, just as the fancy of the apiarist leads him. The shallow store comb cases are peculiarly fitted for the tiering up plan, and like my section cases they have the regular mechanical bee space divided so as to have half at the top and bottom of the frames. This arrangement permits the setting of the cases on any level surface without the bottoms of the frames or sections coming in contact with the plane below, and mashing any bees that may be sticking under them when they are being handled. The brood-cases which may be used for surplus cases also, are made so as to have the half bee spaces at top and bottom, but as they are not handled in bulk the frames are always movable. The very best results can be obtained by tiering the shallow surplus cases, and as they are handled in bulk, while the standard brood-nest-size cases must be manipulated one frame at a time, the former gives less and lighter labor. I have found, however, that to use one shallow surplus case with one standard size, one gets very satisfactory results being nearly a clear gain to the extent of the shallow case full of honey, as the bees will fill the shallow case while they are evaporating the nectar in the full-size surplus case.

There are many handy features about this arrangement. When I find it necessary to feed a colony in the fall, I can slip a shallow case with honey in the combs, under the brood-chamber and my bees are fed at once, and without any disturbance or excitement. I collect together the partly-filled sections and group them together in section cases and tier the section cases under the brood-chamber and thus utilize the partly-filled sections as winter stores for my bees and all is done without the *mussy fuss* of feeding liquid food.

It will be noticed that my favorite hive and case system works with a square joint. Several persons have written me to know if hives, cases, etc., will *stay in place* on the square-joint plan. I have to say that in an experience of eight years I have never had a single case of misplacement to occur by storms or from any other cause. The edges of the cases soon become slightly propolized and stick fast enough for all emergencies.

Christiansburg, Ky., Nov. 7, 1887.

For the American Apiculturist.

WINTERING BEES IN LATITUDE 42° N.

A. W. Clark.

Beekeepers differ greatly in opinion regarding the proper condition and preparation of their colonies for successful wintering. Some think brood-rearing should continue as late as possible, others that all brood should be hatched out in September.

Some prefer packing on outside and some on inside of hive.

One wants brood-nest covered with a board, another with a cush-

ion of sawdust, still another with burlap or wire cloth and loose chaff.

This one leaves the brood-chamber full size; that one contracts to three or more combs.

Many prefer sugar for wintering stores, others think nothing but honey will do.

During a mild winter any of the various plans may work well, but during severe winters, when bees are confined several months at a time, there are but few plans that work well.

At present, my own ideas on wintering are: 1. That all brood should be hatched by Oct. 1. 2. That all hives should be packed for winter at that time. 3. That feeding, if resorted to, should be done during August or September.

In preparing a single-walled hive for winter, I leave in the brood-chamber from three to five combs (Langstroth size) containing from fifteen to twenty-five pounds of honey or syrup. Place chaff-cushions at each side of brood-nest. Over and across the frames place two sticks an inch apart; over all place a piece of burlap, put on upper story and fill with wheat chaff. (Wheat chaff does not mould as readily as do oat and clover chaff.)

Another method which dispenses with sticks and burlap is one that I prefer, excepting the first cost of it. It is simply a frame 3″ × 8″ × 16″ inside, one side of which is covered with wire cloth 10′ × 18.″ This box or frame rests on the frames, cloth side up, and enables the whole colony to cluster in one mass at the top of the brood-chamber, thus leaving a smaller surface exposed to cold air than when the cluster is spread out between three or four combs.

The cover should contain a ventilator to carry off moist air and prevent moulding of chaff.

It will be seen by the above that the sides of the brood-nest are protected by cushions, but that the ends are only protected by a $\frac{7}{8}$″ board. If the hives stand close together in rows, move the hives up so the ends come in contact. Now, all hives in the row are protected, excepting the two end hives which may be banked with straw, hay or even snow; in fact, snow, as long as it lasts, is the best outside packing I know of.

Now, for the entrance. As I use a Simplicity hive I slide the hive over the edge of the bottom-board giving an entrance $\frac{3}{8}$″ × 18$\frac{1}{4}$″. Under the cushions are placed two small blocks, giving a passage way. The alighting-board to each adjoining hive should be of different color or shape to prevent mixing of bees.

So much for manipulation. Now, for my theories regarding winter losses among the otherwise best beekeepers of America.

1. They may live in a low, damp valley where frosts are more frequent. 2. They may use up a large part of the vitality of their bees by feeding late in the season, the bees expending the life force that they need in the spring, in storing the food and protecting the same against robbers.

Some by opening hives often, or, by leaving the entrances wide open after the honey flow ceases, cause robbers to keep the entire apiary stirred up during the fall months.

Excepting such flights as are necessary to avoid fæcal accumulations, it seems to me that the less bees fly or exert themselves between Oct. 1 and the time natural pollen appears, the better they will winter.

East Leroy, Mich.

For the American Apiculturist.

ADVICE TO BEGINNERS OR HOW TO BEGIN.

SELDEN B. HITCHCOCK.

MY advice to beginners will be based upon what I have gathered from experience and observation. In the first place decide whether you are qualified for the business. If you are nervous and fidgety you must cure yourself or give up the undertaking. You must learn to take up a thing without a jerk and to lay it down without a thump.

If you think you are suited to the vocation, your next step should be to select your location. This should be where bees would not be obliged to fly over high hills but where there is a large tract of cleared fertile land; some would say in a valley, but I think the valleys here in New England are swept by winds more and affected more by drought than the uplands; for these reasons I should prefer the latter. It is needless to say you should look well to the floral product for in such a place as I have described this will be plentiful.

After you have decided upon your location the next thing you will think of will be the bees; but, before you make any purchases in this direction, procure some good text-book, one published by a practical apiarist, and while you are getting acquainted with some of the rudiments proceed to purchase your bees, but *don't* go to any man to buy who is *not* a *successful* beekeeper, for if you buy of some box-hive man who takes his honey by killing the bees (and such a man is pretty sure to destroy his best colonies if he gets any honey, and if you buy you get the weak ones); besides in nine cases out of ten such a man will be full of superstitious notions that a beginner will be better off without. I believe there are more superstition and ignorance (and superstition is ignorance) in regard to bees and beekeeping than with almost any other class of creatures or calling that man has undertaken to manage. Go to some successful beekeeper who is well up with the times and one whom you can trust. Tell him what you want and that you are a beginner. You had best start with not less than two swarms but *don't get too many*, go slow, make sure. While you are there learn all you can of his methods, ask all the questions you can think of, then go home and think of more to ask at another time.

Well, after you have got your bees home upon their summer stands and the contents of your text-book pretty well digested, you will want a good bee journal from the pen of a practical beekeeper, something like the "API" and when you have selected one that suits you keep your subscription paid, and thus secure its regular arrival. The journal is important. I know a man who started well some years ago, got posted up for those times, subscribed for a bee journal and was prospering finely; well, he began to think that he knew all about bees and beekeeping and stopped his paper. The result was he is right where he was when he dropped the paper, knows nothing of the improvements since that time only as he stumbles on to some of them in a brother beekeeper's yard or hears them spoken of. A good bee journal is the beekeeper's best friend; with it he keeps abreast of the times, without it, he is working in a box too high for him to look over.

With honesty and fair dealing I see no reason why any intelligent person who is suited to this business and is willing to work with the head as well as with his hands should not succeed.

Westfield, Vt.

THE PRODUCTION OF COMB AND EXTRACTED HONEY IN THE SAME APIARY.

G. A. GREEN.

(ESSAY READ BEFORE THE NORTH AMERICAN BEE-KEEPERS' SOCIETY.)

One of the growing tendencies of the times is toward division and specialization in all departments of labor. That this principle is, in the main, correct, there can be little question. As the field of knowledge is widened, or as competition is increased, and the struggle for success becomes keener, no man can afford to divide his energies and so weaken his powers.

It has been truly said that there is such a thing as momentum in mind as well as in physics, and that many a man has just missed becoming a great man by splitting into two middling ones.

In beekeeping, as in other occupations, the greatest average success will be gained by making a specialty of it, even though an occasional season, such as that just past, may bear hard on some. Yet this principle may be carried too far. We already have beekeeping as a specialty, divided into the sub specialties of honey-production and the rearing of queens and bees for sale, while some insist that honey production should be divided and a specialty made of either comb or extracted honey.

Circumstances alter cases. Undoubtedly there are places where comb honey cannot be profitably produced, and there are probably other places where it will not pay to produce much extracted honey. In most cases, though, a judicious combination of the two will give the best results.

In the first place, study your market. There will be found almost everywhere some who will consume large quantities of extracted honey at its lower price, when they would hardly touch the more expensive comb honey. Supply this demand. There are others who will use only a definite amount of honey, whether comb or extracted. It is folly to sell extracted honey to these. This applies almost as well to the wholesale as to the retail market.

Comb honey, we all know, is sold largely by its appearance. A poor article that looks well will sell better than a good article that look badly. If there is any portion of your honey crop that does not look well in sections, secure that portion in the extracted form. With a good market for dark extracted honey, it will probably pay to sell all light honey in the comb and all dark honey as extracted.

You may have some colonies that do not produce nice comb honey. Pinch off the heads of their queens as soon as convenient, but in the meantime take their honey with the extractor.

Let it be your aim to have every pound of comb honey first-class. Poor extracted honey can be sold for manufacturing purposes, but poor comb honey is hard to sell anywhere, and injures the market for good comb honey.

It sometimes happens that honey comes in faster than the bees can build comb to store it in. At this time a few cases of empty combs distributed among the best colonies will pay an enormous profit.

The production of extracted honey may be combined with the production of comb honey so as to get rid of much annoyance, expense and loss that is inseparably connected with the sole production of comb honey, and at the same time improve the quality of all the honey produced.

To accomplish this result, a large number of extracting combs is

needed—at least one set for each colony. When the honey-flow begins, give each colony a set of combs. We all know that bees will begin work sooner on empty combs than in empty sections, and most of us appreciate the importance of having the very first of the honey-flow go into the surplus apartment. If you are one of those who never have any trouble to induce the bees to start work in the sections just as soon as there is honey to gather, this part of the programme may be omitted, and with a short and sudden honey-flow it might not be advisable.

After the bees are well at work above, remove the extracting combs from as many colonies as you want to work for comb honey, and give them sections. Pile up the supers of partly-filled combs over other colonies. The honey so piled up will become thoroughly ripened, and be a much finer article than that usually produced. Whether for economy or excellence of quality, there is no way of producing extracted honey equal to that of giving the bees plenty of room in which to store honey, and then plenty of time to ripen it.

Along toward the close of the honey-flow, instead of putting on more sections which are not likely to be finished, take all the sections from a part of the colonies, giving them empty combs instead. Use the partly-finished sections instead of new ones on other colonies.

Let us now recount the advantages of this system: First, getting the bees started in the surplus department without delay. Second, your comb honey is nearly all No. 1, and the extracted honey is the finest that can be produced Last, but by no means least, you are rid of nearly all the bother and expense of unfinished sections in the fall. Having few unfinished sections in the fall, you have few old sections in the spring, and it is for this reason that your comb honey will be finer. Honey stored in comb built the year before is never equal in quality or appearance to honey in newly-built combs.

To carry out this system, of course, all parts of the hives must be easily and quickly removable and interchangeable, and capable of being handled by cases instead of by frames or sections.

Section cases should be only one-tier deep, and extracting supers should be shallow — not over six inches deep — and both should be capable of being tiered to any desired height. Queen excluding honey-boards are a great convenience, and, in fact, almost indispensable.

QUERIES.

Answers by Practical Apiarists.

KEEPING BEES AND POULTRY AS A BUSINESS.

Query No. 42. What can a good active man do for a business in connection with bee-keeping?

How would poultry-keeping, or the raising of small fruits do?

READER OF THE API.

ANSWER BY J. M. SHUCK.

If he is born for business, many things. Fruit culture will suit, but berries will need picking in June when the bees are swarming and when the clover blooms. He will be obliged to hire some and if he cannot use hired help at a profit, he will lose if he uses it at all. It does not matter what business if he is fitted for it.

ANSWER BY C. C. MILLER.

It seems to me poultry-keeping is one of the most promising pursuits to connect with beekeeping. Raising small fruits goes nicely with beekeeping, for one who has bees

enough to occupy his time partly in summer. For one who has enough bees to entirely fill his time in the busy season, I don't know many things worse than the raising of small fruits.

ANSWER BY G. M. HAMBAUGH.

Poultry-keeping would do very well, but we should have some hesitancy as to the raising of small fruits, lest the necessary labor to insure success in both would conflict, coming as they do at the same time in the year. Dairying on a small scale, where the good housewife will see to the butter-making, etc., works very nicely in connection with poultry-keeping.

ANSWER BY EUGENE SECOR.

If he does not care to devote all his time and energies to bee-keeping there are a great many things he can do in connection with it, the particular one depending on what he is best fitted for. The raising of small fruits or tree fruits either is all right. It will increase the bee pasturage at a time when little nectar is to be found in the fields. Poultry-keeping would no doubt work well.

ANSWER BY R. L. TAYLOR.

With a considerable apiary one will not lack for work at any time of the year. Why not keep more bees? If one is skilful enough to bring the careful work of poultry-keeping, such as egg production and the care of young chickens within the cold months of the year, say from Nov. 1 to May 1, that business might answer; but do not try to care for many bees and young chickens during May and June. The raising of grapes might do with one who has good executive ability, but other small fruits would interfere too much with the care of bees.

ANSWER BY J. E. POND.

My own opinion is that poultry-keeping and beekeeping would work well together, if the keeper knew his business well in both, and could run the same economically. The chief trouble would be—and I speak from experience—that *each* requires particular attention at the same time. Still, by systematizing labor, that trouble can be overcome. One thing is sure: the man who undertakes to make a success with both, must keep alive and stirring all the time; it will not do for him to have any outside attractions to call his attention from his home work.

ANSWER BY DOCTOR TINKER.

There are many things a good active man or woman could do with profit in connection with beekeeping. Almost every kind of business is followed, with more or less success, by persons engaged in bee-keeping. The keeping of poultry or the raising of small fruits or market gardening or limited farming is each suitable to follow in connection with the keeping of from fifty to one hundred colonies of bees. Each beekeeper should select that pursuit for which he has a liking or to which he is adapted, remembering that intelligent perseverance and industry in any calling are sure of a reward.

ANSWER BY JOSHUA BULL.

To decide intelligently upon this query, the natural taste, capability, and tact of the individual should be taken into account; also the facilities for marketing the products. Poultry-keeping might prove successful with one that likes that business. Small-fruit raising is an agreeable, and I believe, very profitable business when the fruit can be readily sold at a fair price: but the trouble with this is the

fruit needs to be gathered and marketed just at the time when the bees demand the most careful attention; and neither one can be neglected at this juncture without suffering loss. Sheep-raising and wool-growing might go well along with beekeeping. At the time when the bees would need the most care, the sheep would require but very little attention, and *vice versa*. White and Alsike clover make excellent pasture for both.

ANSWER BY G. W. DEMAREE.

It would depend on how he is situated. If he has at his command a small tract of land he might raise a few pigs; some poultry for home use if he has a family to support. He could engage in small fruit culture, gardening or any like employment that promised to yield a profit. A small dairy in connection with the apiary is a very suitable arrangement if there is good sale for the products. My little dairy in connection with my apiary pays well, and is but little in the way of apiary work. One might raise pigs of the best stock for breeding purposes or for the market. Melon culture pays in some localities.

Make it a rule to make a little out of any branch of agriculture that promises to help out the income of the apiary. Go at it slowly, surely and patiently, and you will find yourself far ahead of many who have cut a big swell in business in the final outcome.

ANSWER BY J. W. PORTER.

This question will admit of much broader treatment than the "Question and Answer" department can appropriately find room for. The writer has a large farm and one hundred acres of it are devoted to fruit trees and grape vines.

He has to lead an active life and finds it better for him. He has been told by specialists that he ought not to keep bees; he would not, but for the love of bee culture. No one engaged then in a business which affords full scope for his energy should take up any side business or pursuit, unless he is especially fond of it. Then, it is of the nature of recreation. We all love change.

Those confined to one routine of work are often obliged to, and do, seek recreation in other forms. Others wear themselves out before their time for want of it.

The fruit business — small or large fruits—is well suited to follow in connection with apiculture.

So is poultry-keeping. We do not take stock in the idea of this being a business for the specialists peculiarly.

We rather like the English idea which is more like the time-honored one applied to poultry. Every one who has any aptitude and liking for the business should be encouraged to take a hand in it. A good, active man can do well in any business he is qualified to push, while there are so many drones in the human hive.

For many reasons it is well not to carry all your eggs in one basket. Fruit may fail, nectar may fail, trade may stagnate and bad debts cut off all the profits.

Diversified industry is the safest for the worker. Our bees in a humbler way illustrate this for us. The good worker can and does turn his "hand" many ways. Cleaning house, house-building and food gathering, he is a good defender of his home and a capital nurse and turns himself into a windmill to make his home habitable in torrid heat. A "Jack at all trades" is he and thrives.

ANSWER BY HENRY ALLEY.

Very few people can make bee-

keeping a success; that is, few can get sufficient profit and income to make it a special business. As all localities where bees are kept do not supply the flora in such quantities as would be required for a large number of colonies, therefore bee culture cannot be made a success under such circumstances. In a fair location, say one that would well support fifty colonies, I would advise a person, if he wanted to keep bees to take up poultry-raising. These two occupations seem to go well together and though beekeeping some day may be to some extent overdone, of egg-producing never will, as the United States imports about seventy millions of eggs each year.

MATING QUEENS IN CONFINEMENT.

Kimball, Pa.

MR. ALLEY: I am reading Root's A B C book. As I understand Mr. Root a queen cannot be fertilized in a hive. I see you advertise a "fertilizing hive." Now, if a queen can be fertilized in a hive and any drones used, please let me know.

E. HITCHCOCK.

[Mr. Root is correct. Queens cannot be fertilized in confinement, that is, there has been no practical method yet devised that has come to our attention.

The hives we advertise as "fertilizing hives" are only small boxes that will take but four frames five-by-five-inch square. We call them by the above name as they are used only to keep queens in until they can fly out and become fertile.]

EXCEEDINGLY INTERESTING.

Your December number is exceedingly interesting. "Amateur Expert's" chatty letter is worth the price of the API. E. C.

The American Apiculturist.

Published Monthly.

HENRY ALLEY,
MANAGER,
WENHAM, MASS.

TERMS: $1.00 PER YEAR.

Wenham, Mass., Jan. 1, 1888.

THE MANAGER'S CORNER.

A Happy New Year to all the friends of the API! All who read this are included; no one is slighted.

The Fact that the manager's "chit-chat" is crowded out of this issue is no occasion for an apology from us, as our columns are well filled with articles of great value to the readers of the API and to beekeepers generally We are trying to make the API such a fountain of information and so interesting withal, that no beekeeper when he sees a copy of it can resist the temptation to remit at once one dollar for one year's subscription.

The Meeting of the North American Beekeepers' Society at Chicago in November, 1887, seems to have been a success. We had an idea that its worthy president and energetic secretary would infuse new life into such a meeting. Judging by the reports of the convention all present had a good time. The essays were rather better than common, and some of them will find space in the API during the present year.

"ARTIFICIAL" QUEENS.

Queens reared when the old queen is present, often leaves a lump of royal jelly as large as a pea in the bottom of the cell after emerging, while it is a rare thing to find one-fourth of that amount in any cell where a queen is reared by the removal of the queen by any means. It seems to me that if the friends of any other theory would carefully look into the matter, they would talk less about "artificial" queens being as good or better than those reared during natural swarming.—*G. M. Doolittle in American Bee Journal.*

[Queens reared under the swarming impulse always leave a "large lump" of royal jelly at bottom of cell after the queen emerges, and the same may be found at the bottom of any queen-cell after the queen has emerged, provided the queens are properly reared. As most people rear queens, we acknowledge that little or no royal jelly will be found in the cells.

If we knew that a queen had hatched and left no jelly in the cell, we would pinch her head at sight.

We can send Mr. Doolittle or any other person, during the queen-rearing season, queen cells (from three to five in a row) containing large lumps of royal jelly, equally as large as those found in cells where queens were reared under the swarming impulse.

We claim that by our method of queen-rearing, as given in the "Beekeepers' Handy Book," that we can rear better queens than can be reared by bees at swarming time. We are ready to back up these statements by actual facts and prove it to the satisfaction of any fair-minded person.

Read the testimonials which have appeared in the API the past three years concerning the queens we have sent out. We do not pretend that *every* queen reared by our method is better than those reared by any other process, but we do claim that a much larger per cent of first-class queens can be reared by our plan than by any other.

If Mr. Doolittle will read the bee-papers carefully he will find that many of our best beekeepers, both in America and in Europe, claim that queens reared by "artificial" methods are equal in value to those reared under the swarming impulse.]

How I produce Comb Honey is the title of a 12-page pamphlet by Geo. E. Hilton of Fremont, Mich. The author has had eight years' experience in the production of comb honey. The book is printed in clear type and is mailed for twelve cents per copy.

Mr. Hilton also sends out a 6-page illustrated circular of beekeepers' supplies.

GLEANINGS FROM CORRESPONDENCE.

VERY GOOD.

Newburg, Ind.

MR. H. ALLEY: Please continue the API for 1888. I take four other bee papers and owing to a bad year for bees must discontinue two of them, but the API *never* as long as it is published. I found it bread and butter to me the last two years.

DR. GEO. LOCKE.

WELL PLEASED.

Wayback, Texas.

MR. ALLEY: I will say that the warranted queen received from you in August last was a perfect success. I never was better pleased with bees than that of her offspring.

I introduced her August 27, and in thirty days her young bees were flying about the hive.

J. H. HARRISON.

JUNE NUMBER OF API.

Glenwood, New South Wales.

MR. ALLEY: Please let me know when my subscription runs out.

The June number, containing essays on "Comb Honey Production" was worth a considerable amount to me.

MAJOR A. SHALLARD.

LIKES THE API.

Foxboro, Mass.

MR. H. ALLEY: I noticed by the cross mark in December API that my subscription had expired. Herewith find $1.00 for renewal.

I like the API very much and think it improves with every number.

JULIA A. C. HOLDEN.

WELL PRINTED AND FULL OF GOOD THINGS.

Holliday's Cove, W. Va.

MR. ALLEY: The sample copy of the API received. Your journal is so well printed and so full of good things I am tempted to have *all* the numbers.

If your paper does not lead it is certainly fully abreast with any of the old reliable bee journals.

JOHN A. BUCHANAN.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

Published Monthly. HENRY ALLEY, MANAGER.

VOL. VI. WENHAM, MASS., FEBRUARY 1, 1888. No. 2.

We deal in first-class apiarian supplies of all kinds, lowest prices. Prompt shipment. Send for price list.

Established in 1883. Terms: $1.00 per year, 50 cents per six months, 25 cents per three months. Cash in advance.

Any yearly subscriber is entitled to one of our selected queens anytime between June 1 and Oct. 1, by remitting 50 cts.

Address all communications, AMERICAN APICULTURIST, Wenham, Mass.

For the American Apiculturist.

MELISSA, OR THE HONEY PRODUCER.

A. C. TYRREL.

"*Melissa officinalis*," or the "Honey Producer," also known as "Balm," "Bee Balm" (old name from Greek for bee). Thirty thousand flowers from one seed.

In this article you will find the information desired as to the manner of cultivating *Melissa*, its habits, etc.

Botanical description of Melissa:— calyx with 3-toothed upper lip flat. Corolla more or less curved and ascending. Filaments arching and bringing anthers together in pairs, rather hairy, loosely branched, lemon scented, with ovate or scarcely heart-shaped crenate-toothed leaves and yellowish or snow-white flowers in small loose axillary clusters. Right here I must digress to say that although the flowers were originally pure white, as described above, I now have plants with purple stalks and flowers, cross-fertilized by my bees. By carrying pollen from "Phacelia" a small blue flower, and "good bee food," to *Melissa*, the transformation was effected, proving *conclusively* that bees are not confined exclusively to one variety of flowers in gathering honey, but flit from flower to flower, if in close proximity; and it also shows the agency of bees in cross fertilizing and otherwise improving flowers. This is the most wonderful and convincing transformation wrought by bees that has come under my observation, and those who contend that those harmless insects injure fruits and flowers, are not well informed. One more observation in this connection; I have a bed of pure Crescent strawberries a pistillate variety. The rule for planting is:— they must have hermaphrodite or perfect-flowered varieties planted every fifteen or twenty feet among them or they will produce imperfect fruit.

My hermaphrodite sorts were growing 200 or 300 feet from them but I had a good yield of *perfect* fruit from the Crescents, through no other agency than the bees. But to return to my subject. *Melissa* is the *oldest recognized* honey-plant in the world, being known to the Greeks, as its name indicates, and so-called on account of the attractions the plants possessed for bees. It was imported in 1881, and thoroughly tested since, but I did not call the attention of apiarists to this remarkable plant until 1886, preferring to fully satisfy *myself* first as to its merits or demerits. Since then I have scattered seeds broadcast, as it were, over nearly every

state in the Union, and have received many flattering testimonials unsolicited on my part. I now claim for it without fear of successful contradiction, that it is the best honey plant in existence, thriving last season (the dryest ever known in the history of our State) and producing an abundance of honey after all other flowers were either killed by drought or failed to secrete nectar. During the latter part of the honey season in 1886 a severe drought prevailed, but *Melissa* was not injured in the least in this locality. The seeds are *sure* to germinate under the most unfavorable conditions. Plants root deep, are very hardy, free from insect ravages, grow with very little care, bloom *profusely*, and the exquisite fragrance from the flowers is imparted to the honey. Despite the severe drought here all summer my plants were a marvel to behold.

August 15, I sent to the "American Bee Journal" a mammoth stalk which measured two feet and seven inches in height, eight feet and ten inches in circumference, and had up to that date put forth *thirty thousand* flowers. The editor commented on the plant as follows: "We find the plant to be *just* as it is described above by Mr. Tyrrel. * * * * It was known to the ancient Greeks to possess a wonderful attraction to the bees, hence they named it *Melissa*, or the "Honey Producer." It is also called balm, balm-leaf, etc. It is credited with being a hardy grower, is fragrant and very productive, as is also shown by the above where Mr. Tyrrel says that the plant sent us has already put forth thirty thousand flowers, not counting the smaller laterals or buds of which there are several thousands in various stages of development. It will thrive on either wet or dry soil, and will pay for cultivation for its honey alone." Being an *annual*, the plants are of much greater value than the perennial varieties. Bear in mind that *Melissa* is not a noxious weed, that will, if allowed, take possession of your farm or garden, but a flowering plant fit to grace any lady's flower bed, for its exquisite fragrance, even the stalks and leaves emitting a grateful perfume. If at any time you wish to exterminate the plants, cut them off close to the ground, and they die, root and branch; but I believe no beekeeper after one trial will begrudge the ground they grow upon.

Seeds should be sown or plants set, if the soil is *rich*, thirty-six inches apart each way, and tended to produce the best results, like other flowers or vegetables. *Once sowing* is sufficient as plants spring up so thickly the following season from seed self-sown, that few if any weeds can grow. If the seeds are sown and lightly covered in the fall, just before the ground freezes, plants will spring up before the frost is fairly out of the ground, and before weeds start.

Young plants grow rapidly and strong, and shortly after they spring up can be cultivated with a horse.

If your ground has been kept free from weeds the first season, no further attention is necessary for years to come, unless perhaps, to drag the ground every spring thereafter, to mellow the soil and thin out the plants which will come up so thickly as to entirely hide the ground. Remember you are not obliged to sow time and time again to insure a good stand, as is the case with Melilot or sweet clover, and it will thrive as well as, if not better than melilot, in waste places. I have to-day sown half a bushel of melissa seed on the snow in waste places along the creek banks, a few rods from my apiary. Seeds can be sown in the spring as soon

as the ground is fit to be worked (frost does not injure the young plants).

Melissa remains in bloom from forty-five to sixty days. For a late crop I sow in this locality the latter part of May, and as late as June 15. October 4 (this year) I had plants in bloom, and there were the bees "congregated together." Mr. E. A. Morgan, Columbus, Wis., Oct. 3, 1887, says: "The yield of honey was large and quality and color as good as white clover. Motherwort, catnip and sweet clover were deserted for this." My bees desert *all* flowers for melissa and not a solitary plant escapes their notice, no matter how isolated.

Noticing this fall when gathering seeds shortly after a light shower that they were highly glutinous, I sent a packet of seeds to the Woodman Linseed oil works, Omaha, to ascertain their value for oil. The president wrote as follows and sent sample of oil: "The sample of seed contains 24 % of oil. Flax seed contains about 38%. In extracting oil from flax seed by hydraulic pressure about 7 % of oil is left in the cake." If, as Mr. Newman says, melissa will pay for cultivation for the *honey alone*, and taking into consideration that the seed is valuable for oil, who will dispute my oft-reiterated statements that melissa is without doubt the best honey plant in existence? It is *the* "honey producer," in every sense of the word.

Madison, Nebraska, Nov. 25, 1887.

Any Person who will send us the names of three **new** subscribers and three dollars will get one of our best queens free by mail, at any time during the queen-rearing season. Each subscriber can also get one such queen for fifty cents. One of the latest imported Drone-and-Queen traps will be sent free, by mail, to all who subscribe or renew before March 1.

For the American Apiculturist.

ESSAY ON DRY SUGAR FEEDING.

WALTER CHITTY.

DEAR APICULTURIST:

The old-fashioned method of standing over the saucepan and boiling the syrup for bees was found very irksome in even a small apiary, but when it comes to doing it for a large number of colonies it is next to impossible. This has led many beekeepers to study other ways of feeding bees, especially with dry sugar, and in our opinion, no better method has been discovered than that practised by Mr. Samuel Simmins of Rottingdem, England.

To commence with the spring. If the colony is found to be very short of food early in the spring, it is perhaps best to give the bees a little warm syrup, just to put them in "good heart" and afterwards to feed with dry sugar. The best sugar to use for this purpose is undoubtedly Porto Rico, as it is nice and moist and can be pressed nicely down into the feeders. Feeders are of various kinds. The original feeder made by Mr. Simmins was simply a frame closed on one side and the other side was hinged so that it would open. The hinged side reaches to within $\frac{1}{4}$ inch of the top rail. This side is opened to allow the sugar to be put in. It is firmly pressed down, the side closed and then hung like an ordinary frame, hinged side toward the bees. The bees enter at the $\frac{1}{4}$ inch opening, and work in a body there. While dry sugar feeders like this are in use, keep the bees crowded with a sheet of American oil cloth, covered over with a few layers of carpet to keep all warm and to induce moisture.

Besides dry sugar being used to

feed the bees, it is also of great utility in the production of wax. As soon as warm weather sets in, a dry sugar feeder can be placed at each end of a colony of bees. Then take a body box which would hold say ten frames (or less). Put eight frames of foundation in this box and a dry sugar feeder at each end, and place this box over the colony of bees. Being provided with so much dry sugar above and below, the bees will draw out the comb in three or four days. These frames can be taken out, and all the combs cut out clean except a short strip. The comb thus cut out can be cut up into nice little pieces which would exactly fit into sections. Other frames of foundation can be put into the body box to be treated the same as before. The frames with only the short strips of comb can be placed in the front of hives nearest the entrance, and this will in a large measure prevent the bees from swarming. When sections are thus filled with this beautiful new comb, they will be filled and sealed with wonderful rapidity. If frames of combs are wanted for swarms or other purposes, they can be utilized that way without any of the comb being removed. Of course, all feeders must be removed as soon as honey is coming in because we want stored honey and not stored syrup. The feeder mentioned above is about an inch deep, but some are made much deeper. If you want one deeper than one inch it would be better to go to about three inches ; as, if you had any size over one inch and less than two inches, it is probable the bees would fill the feeders with comb after emptying them of sugar. Dry sugar feeders are also made of a circular form, and placed on top of the frames. These do very well, but the other sort is best for most purposes.

Dry sugar feeding can also be practised in autumn with great success as follows: If you have any reason to suppose the bees will be short of food before the spring, lay a piece of paper flat over all the frames, and reaching quite to the hive side. Puncture the paper in one or two places just over the brood-nest, or cluster. Then take some Porto Rico sugar and spread it nice and evenly all over and press it all down firmly quite up to the hive sides. This will prevent any draught and the warmest part of the hive will be under the centre of the sugar. Of course, the sugar must be nicely covered up with several layers of carpet. The bees will eat out all the sugar, leaving only a thin crust which can easily be removed. If you do not care about having the sugar loose all over the hive, you can take a large basin, one that would hold eight or ten pounds of sugar, press it all firmly into the basin and then invert it over the cluster of bees. They will ascend gradually and eat it completely and as the dome shape is favorable for the retention of heat, the inside of the basin will be the warmest part of the hive. This dome-shape must not be lost sight of, for most of the best syrup feeders used in England are constructed so that there is a dome under the bottle, and then even syrup can be fed in the coldest weather though I do not advise doing it. I have, however, frequently left a dome-shaped syrup feeder on the hive all the winter much to the comfort of the bees. It must, however, be remembered that this is being written in England, where the winters are not so severe as in many parts of America. Our hives *always* remain on their summer stands during the winter. I do not by any means wish it to be thought I have exhausted the subject of dry sugar feeding, but I have per-

haps come to the end of the limits for an essay, and should esteem it a high honor if thought worthy of the premium offered. If not worthy, perhaps a humble spot may be found for my words in the "AMERICAN APICULTURIST."

Pewsey, Wilts, England.

For the American Apiculturist.

SOME THOUGHTS ON WINTERING.

C. H. DIBBERN.

ALTHOUGH this subject is rather old, and has been the theme of many a writer, for many years, yet it remains one of the most important to the beekeepers of the present. Every little while some enthusiastic apiarist will throw up his hat, and exclaim that at last this perplexing thing is settled. Is it? Of course this enthusiast at once writes to the bee-papers how it is done. It is usually the same old story, that by means of contracting the brood-nest, and packing all around with some nice "warm" material, usually saw-dust or chaff, bees can be wintered safely every time, no matter what the weather. When a severe winter comes along, and gives these methods a real test, usually a strange "coolness" settles over these beekeepers.

I have practised cellar wintering for many years, believing that I can carry them into, and out of, a convenient cellar much quicker than I could prepare them on the summer stands. Then, too, when in it is considered that much less honey will be consumed in the cellar, it is with me a "weighty" conclusion. I am aware however, that all are not so situated where they can have good cellars, and a poor one is often worse than none. For a number of years I have wintered some colonies outside, partly as an experiment and partly because my cellar was too small to hold quite all. I have tried about all the kinds of winter packing, that I have read of, in various bee periodicals, but only with indifferent success. My apiary is situated on the south side of a knoll somewhat protected from the north and west by a fence and some evergreens. It is shaded by small trees, but in winter when there are no leaves, it is rather a sunny place, whenever the sky is clear. During the severe winter of 1880 and 1881, I had but one colony out, with but slight packing, yet they came through all right. This same winter I had some sixty colonies out on shares, with a man, who thought he knew it all, and he lost every one. This apiary was on the northwest side of a hill, facing west, where the snow lay deep all winter, and the sun had but little effect on the hives. Another severe winter I had some forty colonies out, packed in various ways, and I lost about one-half. As they were in different parts of the apiary, I noticed that those situated where they were best protected, and had the most sunshine seemed to come out the best, and the packing seemed to be a disadvantage, as I lost more that were packed, than of the others. One thing surprised me that year. One hive I had forgotten, and left them without a mat or honey-board over the frames, having simply replaced the outside cap, with an inch auger hole in the end. Strange as it seemed to me, they were all right and one of the strongest colonies I had left.

The conclusions I have come to from these lessons is that the more sunshine we can give our bees in winter and spring, with suitable protection from the north and west

winds, the better. To carry out this idea still further, I am experimenting with a hive that is only seven inches deep, with nothing but a honey-board, and the top, a board one inch thick, when the cases are removed in winter. This hive faces south and I elevated the back end by setting it on a < shaped stand, to an angle of about 45 degrees, so it will get the direct ray of the sun on top. It is my theory that this will give them a good warming up inside, on clear moderate days, and enable the bees to shift from one comb to another, get supplies within reach, etc. It will probably be necessary to shade them, should the sun come out warm, after a light snow towards spring. It may be, however, as there will likely be a number of days that they can fly out, and as they have been warmed up so often, that they will not be so anxious to get out. My only fear now is that the winter will not be severe enough to make the test of much value. I shall keep experimenting on this hive till I find out if there is anything in this idea or not. I believe it will be quite a help in rapidly breeding up in early spring to turn the hives up to the sun as indicated, before the honey cases are put on; after that I would place the hives nearly level. I think the sections are usually filled nicer when the hives are not tilted up much.

Milan, Ills.

For the American Apiculturist.

THE PRODUCTION AND SALE OF HONEY.

J. A. Buchanan.

It has been said by so many of our ablest writers that more than twice the amount of honey is produced now than was obtained twenty or thirty years ago, one might, without due consideration, be led to think this true; but this is not the case.

I am aware of the fact that more than twice as much honey finds its way into the towns and cities than did many years ago, and just here lies the secret of all the trouble about the overstocked market.

Many years ago there could be found at almost every farm house enough bees kept to supply the family with all the honey needed. This was as it should be; in fact, there is still no good reason why every farmer should not keep enough bees to supply his table abundantly throughout the year with one of the most health-giving foods that have been so abundantly provided for man.

That farm is incomplete where bees are not to be found among the live stock kept. Every good progressive agricultural bee journal has its columns of information on the art of beekeeping, which, if read and put into practice would enable the intelligent husbandman to care for a few colonies of bees successfully. But it is a fact that the art of beekeeping has grown to be a stranger to him, and now the majority of farmers buy what honey they consume. In most cases, however, they do without, more for the reason that it is not to be had conveniently.

Here is an unsupplied market which would consume, if supplied, great quantities of honey, relieve the overstocked cities of the surplus that the specialists in honey production have caused by the foolishness of shipping all their product to these commercial centres, while their home market goes unsupplied, or if supplied at all, it is by honey brought there by commission men and dealers at so high

a price as to make its free use beyond the means of the masses.

If honey that is now produced was as equally distributed throughout the country as it was in olden time, there would be a demand at good prices for every pound that has been or is likely to be produced. There never has been anything like an over production of honey. Specialists are producing a great deal, but many of them have so little confidence in their own ability to make sales of it, they put it up in the best of shape and away it goes to some city commission merchant who so often reports back: "Your honey arrived in very bad condition, much of which was broken out of the sections, is in poor shape for bringing anything like a fair price, but we will do the best we can for you," when the facts are that the honey had been received, in the best of shape and readily sold at good prices. Well, after long delay, the beekeeper — in the meantime becoming anxious for some kind of a return or settlement — writes to know what is the best that can be done. The answer finally comes back. "We got an offer of eight cents per pound for honey you sent us and fearing it might be the last chance we let it go, but will not take any commission on the sale as it has turned out; sorry, but we have done the *best* for you we could."

"The best we could" with a big B, but how often the whole story is a big lie. Reader, if you have been there, you know how it is yourself. I will give you a sample of some things I have seen on this line. A commission house, in a city a few miles from my place, received a pretty good consignment of choice white clover extracted honey put up in sixty lb. cans. Part of it was sold for ten cents. Ten cans had remained on hand for several months and had candied and when the caps were turned off to show the honey, it would bulge out and stick and daub everything near it. One day this fall I was in this house, when a storekeeper came in and asked if there was any more of that extracted honey on hand? One of the firm showed the stock, but the buyer said, "Why! this stuff has all gone back to sugar, I don't want that at any price." After the man left, the head of the firm said to me, "Mr. B, the man who shipped that sugar-made honey to this house will learn that "honesty is the best policy" before he is through with it. I will sell it for five cents per pound the first chance I have and after I take my commission out, there will not be much left." Said I, "just put it on the scales and see how much there is; I will take it." There were six hundred pounds of it, which cost me but $30. I took it home, liquified and sold it to my customers for fifteen cents per pound; but what did t'other fellow get? He got one lesson in the commission business if he got nothing more.

The great law of supply and demand is supposed to regulate prices, and should, but does not in all cases. As proof of this assertion, I will say that the demand for all the honey produced, even in the best seasons, is sufficient to consume, at fair prices, all that is produced, but what is radically wrong is that the supply is not distributed so as to come within reach of the demand. Some may claim that "owing to the sparsely populated country where they live and the large quantities of honey produced, there would be no such thing as finding sale for all that might be produced, and we have no alternative but to send our product to the commission houses to be sold. Now when this is the case there is no help for you; do

the best you can. The light crop this season will free the country of all the old and the new crop, prices will be good for a while until bee men get frightened again at their stocks of honey whereof it will crowd and crush to the city markets until the price goes way below the cost of production; then comes the sickly howl from beekeepers who say "beekeeping don't pay" and up goes the signboard: "A whole apiary for sale, as *I want to go west.*"

To dispose of honey at the best prices I put a peddling wagon on the road and supply the town and even country within easy reach. By this means large quantities of honey are sold under my own supervision. Our average sales per day during the selling season are about 500 pounds. The beekeepers should sell their own product, and avoid as far as possible dealings with commission men.

Holliday's Cove, West Va.

For the American Apiculturist.

PREPARE FOR THE HARVEST.

J. M. Hambaugh.

The bees are at rest. We march through the silent corridors of their subterranean abiding place, with nought to remind us of the throng within, save an occasional stray bee, wandering from the fold, to die as it were, unmolested by sympathetic companions. The light we hold in our hand reflects its dim rays upon their silent homes, which would impress our senses more with being in the presence of a graveyard, than in the midst of a vast army of the most industrious of all God's created beings. We march a little farther, we listen with abated breath, we hear a low murmur, we bend our ear to ascertain the cause, and conclude it to be a colony changing their position to receive their stores in cluster. We peer through a glass wicket of an observatory, and view a colony in a true state of hibernation *à la* W. F. Clarke. We then consult the thermometer and find the mercury at 44 degrees, conclude that all things are well, and then proceed to ascend the stair-steps, leading into our kitchen. When at the top, we close the trap-door, and in a short time we are found at our desk, giving vent to the following chain of thoughts.

Let each and everyone, who has the interest of bee culture at heart, look well to those essential requisites that will meet the emergencies of the moment, and with no loss of time let our little laborers improve every shining moment. Should you be the possessor of only a few colonies of bees, and mind engrossed in farm or other matters, you should be the more eager to prepare everything in readiness during the idle winter months that no time need be consumed from other pursuits during the busy season. It is not necessary to prepare a large quantity of extra hives for the reception of swarms, should you prefer honey instead, more especially should your bees be in ten-frame Simplicity or larger sized frame-hives. You can control the swarming impulse to a great extent by proper manipulation, should you have everything at hand and commence in time. Of course a few extra hives, or lower bodies, should always be at hand in case of emergency. Then should you be running your bees to comb honey, all upper bodies should be overhauled and carefully placed away, as well as section cases, drone-and-queen excluders, skeleton and plain honey boards; in fact, any- and everything

pertaining to the production of comb honey. Your sections should be at hand, also brood frames tacked up and wired, ready for foundation, and should you not be in possession of a bee-book, don't delay but get it with the shortest possible dispatch. A. I. Root's "A B C of Bee Culture" and "Cook's Manual of the Apiary," are among the best, and are worth $1.25 to those wanting a treatise on bee culture. Should you wish to keep up with the times, you should take a bee paper Among the best are the AMERICAN APICULTURIST, "American Bee Journal" and "Gleanings in Bee Culture." In case you desire to run your surplus honey for extracting, you should have your surplus departments all at hand, brood or extracting frames all tacked up and wired, ready for the foundation, which should be put in, in full sheets. As soon as the warm days of February or March appear, on some warm and sunny day, all cases, upper and lower bodies, should have two coats of paint and everything in readiness for the approaching harvest. I will give my mode of manipulating to produce the best results in a future letter.

Spring, Ills., Dec. 26, 1887.

For the American Apiculturist.

AN INTERESTING LETTER FROM TEXAS.

L. STACHELHAUSEN.

IN December issue of the API you published some part of one of my letters to you. This is all right, but I would like to have the reader of the API know a little more about my experience in beekeeping. It is eight years since I made beekeeping, especially honey-producing, my exclusive business here in Texas.

My first lesson in beekeeping dates back to the year 1857, when I assisted an uncle of mine in his small apiary a few months every year. As soon as I left the University and had my own business, I bought some colonies and started my apiary. This was in 1867; so I can say I have had thirty-one years' experience in beekeeping. Since 1877 I have written articles for German bee papers.

Your API has improved very much. The idea to have some timely articles on the same matter from different writers is an excellent one. I hope to see more such issues as the June number. They are interesting and profitable to the most experienced beekeeper. In some things I go my own way, but I learn considerable from the different beekeepers, and sometimes a single idea caught in a bee paper is worth more to me than the cost of all the papers together; and your API has done a good share in benefiting and instructing me.

The article on "British Bee Hives" is very interesting. Mr. Locke published a translation of "Christ's" old book. Well, the same Christ recommended, about one hundred years ago, a hive very similar to the "Stewarton," and his hive was in use in Germany till Dr. Dzierzon invented his hive with movable bars and is still in use. The stories of the "Christ"-hive were interchangeable (the brood-chamber had two stories) and reversible, but had no movable combs. Later, the "Christ's" stories were adjusted with Dzierzon's movable comb bars, but the combs were not very handy to manipulate. Some years ago this old "Christ"-hive was recommended again, but adjusted with comb-frames. Closed-end frames pressed together by screws were in use in Germany about ten or twelve years,

and if I do not mistake, Hetherington's hive is very similar and older still.

I, myself, for example, have used a half bee-space above and below the frames in the stories of my hives since 1880, and can prove this by sufficient evidence. So I cannot see anything new in the Heddon hive, except this slatted honey-board. This is of great value, but not patented.

Selma, Texas.

For the American Apiculturist.

THE BEEKEEPERS' CONVENTION AT CHICAGO.

JOSHUA BULL.

The wise man said that, "Iron sharpeneth iron; so a man sharpeneth the countenance of his friend."

I think the foregoing proverb is very pertinent to the Beekeepers' Convention which was held at the Commercial Hotel, in the city of Chicago, on November the 16th to 18th inclusive. A goodly number of beekeepers were in attendance from adjoining states, east, west, north and south, from Florida to Canada, and among the rest a few ladies favored us with their cheering presence. One encouraging feature which characterized the entire convention was the lively interest manifested in the discussions upon the various topics presented for consideration. And this interested feeling seemed to intensify at every successive session. There was no remissness, some one was always ready to occupy the time, and it frequently happened that two or three or more would arise to speak all at once; yet all went on harmoniously and a spirit of cordial friendship seemed to pervade the whole convention throughout all the discussions and deliberations. Although a very pronounced difference of opinion was often manifested, yet there was neither wrangling nor chafing. Good nature predominated. It was a source of much satisfaction to the writer on this occasion to meet face to face with many whose writings have rendered their names familiar as household words, greet them with a friendly shake of the hand, and hear them voice their thoughts, each one in his own characteristic manner and tone, which conveys to us a much clearer understanding of their sentiments than we frequently get by reading what they have written. The manner in which anything is said ofttimes appeals more forcibly to our senses than do the words of the speaker. Mind comes in contact with mind and new thoughts are suggested, new ideas conceived, new resolutions are formed, a fresh impetus is given to our zeal, and fresh energy infused into all of our plans for the future. Thus, by a mutual interchange of thought, all may be benefited.

It was a matter of regret that there were not more beekeepers present from the eastern states, and from Canada, in order that we might make their acquaintance, enjoy their company, and draw from their store of knowledge for the general welfare of us all.

When the convention had finished its labors, and the final adjournment was announced, it was not without feelings of reluctance that we took our leave of the numerous friends with whom we had formed such pleasant acquaintance during the three short days in which we had been associated together. I think that all who were present returned to their homes feeling that they had been amply repaid for coming together. The many advantages to be gained by attending these conventions may

not be readily seen all at once; recollections thereof will often spring up afresh in our memory for years to come; and when we read from time to time the writings of those whom we there met and with whom we formed an acquaintance, the visage and deportment of the author will always be associated therewith in our mind. We shall therefore very naturally feel more deeply interested, and consequently more largely benefited by what we read.

Seymour, Wis.

For the American Apiculturist.

THE HONEY MARKET REPORT.

BY M. M. BALDRIDGE.

HURRAH for the API and friend Alley! It pleases me immensely to learn from the December issue of the API that friend Alley has at last discovered that the so-called market reports on honey, prepared by the shrewd and self-appointed commission men, are nothing more nor less than *free* advertisements, also a snare and a delusion. Not content at having got the control of the bee-papers with their *free* ads., but what "cheek" the commission men must have to demand that the beepapers shall *pay* them for their patronage! Just think of it! Why, friend Root confessed at the recent Chicago Convention that, in order to get fresh market reports he had found it necessary and advisable to supply the commission men with postal cards and reply envelopes! By this means the commission men would sometimes change their standing advertisements!

Now, it does seem to me that the bee-papers and their subscribers will sooner or later awake to the real facts in this matter, and, when they do, they will demand a halt in tones that will not be misunderstood. The time is near at hand when the *self*-appointed honey dealers will be obliged to take a back seat, and when the bee-papers and their readers awake from their Rip Van Winkle sleep they will then not only wonder but be amazed at their past and present stupidity!

St. Charles, Ill.

For the American Apiculturist.

SMART IGNORAMUSES.

JACOB DICKMAN.

YOUR offer to send the "API" one year to fifty beekeepers for articles of interest makes me feel like trying. 'Tis interesting to me to listen to the immense knowledge (?) of some beekeepers: when we hear one say that "I have a way to prevent afterswarms that beats anything yet discovered," and I ask, Do you take a bee journal? The reply is, "No, I find experience better than all the bee-journals." I confess I don't know how to talk to that man. There are many such knowing ones. And to prove their knowledge will ask, "Can you tell me whether it is the old or young queens that leave the hives when the bees swarm"? or "Can you tell which is the male bee?" Or, when they will say, "I tell you it's wax that the bees carry on their legs," or, "my bees died last spring because there were no *drones* in the hive, the queen's eggs wouldn't hatch." Or, when we say that the bees can get no honey at present, stating the cause, they exclaim "Pshaw! bees will go into the carcass of a dead horse and make honey." When told that bees don't make honey, they exclaim, "I'd like to know how else they get it." One to whom we had sent a journal during the summer was asked in the

fall, How do you like the Journal? answered "don't like it at all, can't get any get honey out of it." Another, being told my bees had given 1000 pounds from eighteen stands, exclaimed, "you have more basswood and they must have *sucked the sap* out of them," these and quite a few other expressions more laughable than the above, were made in my presence. What, oh! what, can be done to get them to take the journals!

Defiance, O.

For the American Apiculturist.

CLIPPING WINGS OF QUEENS.

L. H. LINDEMUTH.

IN the winter of 1885 I bought and read "A B C in Bee Culture," and one thing which impressed me strongly was the clipping of queens' wings to keep them from absconding. In the spring of 1886 I had six swarms, spring count; I clipped the wings of four of the queens, cutting off the feathery part of one wing diagonally across. Three of the clipped queens swarmed in May. Some time after they had swarmed, I examined the colonies and neither of them had a queen with a clipped wing. I spoke to a neighbor bee-keeper about it, and he told me that bees take a dislike to queens with clipped wings and kill them. The thought struck me he should know, having a number of colonies himself and being an old hand in in the art of apiculture. I also had some conclusions in the matter; one thing was the queens died of old age, but this theory was destroyed when I examined hive No. 4 and found that the queen which was clipped was replaced with a queen that had perfect wings and the queen with the clipped wings could be found nowhere in the hive. This colony of bees was queenless in the spring of 1886 and was given eggs from another hive from which they reared a queen and after she was fertilized and commenced to lay I clipped her one wing. I know it was not old age in this case. Another conclusion is my bees being hybrids and naturally of a cross disposition they might be apt to kill queens when clipped; a third reason was it might be that I made an error in clipping but one wing instead of both, so that the bees would not notice the difference in the wings, if there is such a thing as the bees taking notice of such defects in the appearance of the queen. I saw a statement that Mr. Doolittle made in "Gleanings of Bee Culture" about clipping queens' wings. He says he would rather care for three colonies whose queens are clipped than for one swarm where the queen is not clipped. I would myself, but not when the clipped queen is replaced by a queen that is not clipped. I would like if some beekeeper, ripe in experience, would give some plausible reasons why my bees acted so strangely.

Lehmaster, Pa.

For the American Apiculturist.

TWO YEARS' EXPERIENCE IN BEEKEEPING.

E. W. COUNCILMAN.

I COMMENCED two years ago by first building a cellar, under my kitchen, 16 × 20 feet, with a wall two feet and a half thick laid in cement from bottom to top. I ventilated by running a four-inch stove-pipe from near the bottom up through the kitchen floor and attaching it to the stove-pipe. I

then bought twenty swarms of bees, mostly black, in Langstroth hives, with three or four hybrid colonies of Cyprians and Italians. Winter came on before the walls of the cellar got dry, and I was obliged to put my bees in. I lost one colony in February by placing the hives too near together when setting them out for a flight. One of the hybrid colonies seemed to break up and join the other bees.

My bees came out of the damp cellar with the combs somewhat moulded; but in a day or two the hives and combs were as a new house after house cleaning. I obtained 1,800 pounds of section honey in one- and two-pound sections with an increase of ten swarms. The next fall I cemented the cellar bottom in time to get it perfectly dry and as hard as a rock before the bees were put in. Last spring I had no mouldy combs and the good fortune to bring out alive every swarm I put in, notwithstanding the great destruction among the bees of this state and country generally; four colonies, however, were rather feeble. If I had changed stands with my strongest swarms as I afterwards did with two of the weak ones, I should not have lost any. In this way the bees equalize themselves, because when the bees take a flight many will go back to their old stands. Of course a few bees will be killed. The same rule works like a charm with robbers. First find the robbers and then change stands, putting the robbers on the stands of the colony being robbed, and you will see the most astonished swarm of bees you ever saw. The robbers won't know "t'other from which." They will find plenty of business at home, and at the same time you will build up your weak swarms, as many of the robbers will go to the old stand and make themselves perfectly at home and help defend it even against their own family.

The past season, as all beekeepers know, was probably the worst one for twenty years for surplus honey. I cannot boast much this year, not having got as much surplus by one-half from double the number of swarms as I did the year previous. About eighty colonies, having been added to my apiary by purchase and increase, are all in the cellar in good condition. It is just a pleasure to go down and slide back the door and listen to their contented, happy hum.

I tier them up, one on top of the other, with an inch strip between, with the enamelled cloth, with cap removed, giving them free ventilation over the top.

My wife, by the bye, is very fond of helping work among the bees and quite plucky withal. So last summer a swarm came out, alighting far out on the end of an apple tree limb, not a very good place to get near the bees with a ladder. She said she could stand on a high stool and hold the swarming box on her head, while I should shake the bees into it. The cluster fell on her hands and stung her fearfully. But she is composed of better stuff than the "darkey" in the story, which went the rounds of all the bee journals last summer, placed in the same predicament; my wife hung to the box, bees and all until I came to her relief. However, I would not advise beginners to let their wives help to hive bees any way. I would have a sack stitched in the mouth of a wire hoop and a bail hooked on the end of a pole of convenient length by putting a ferret with a hook on the pole. I would then go under the swarm and push the sack up until the bees were completely in the sack and give a sharp, little push upwards against the limb when all the bees will be in the sack ready to dump into or in front of the

hive. Don't you see how easy it is?

I notice nearly all our beemen, in giving their experience and advice about wintering bees, recommend wintering on summer stands. But this packing in dry sawdust and chaff and all that sort of thing is too much bother for me. I do not want any of it on my plate. Give me a properly constructed cellar. I want my bees where I can hear them sing occasionally even during these long, dreary winter days and nights. Their happy, contented song cheers me. Give me the sweet harmony of of fifty or a hundred colonies of bees in a good warm cellar; it is an entertainment to charm the "gods" and is the sweetest music I can hear.

Newark Valley, N. Y.

[We would not advise any one to make a swarm-catcher of his wife. Send and get a good queen-and-drone trap and thus remove all danger of stings or of the swarm absconding. The wife can then hive the swarm without being stung or by using a big bag on a pole. The bees will return to the hive or location from which they went.]

For the American Apiculturist.

A DEFENCE OF MR. HEDDON'S RIGHTS.

O. B. Barrows.

A man by prophecy may excite some wonder once or twice, but after that people get to understand that it is in the man . . . Twelve or fifteen years ago I saw at our state fair at Cedar Rapids, Iowa, a Mr. Pogenpohl selling farm rights for a beehive with which he warranted an ordinary swarm, put in during the month of June, would store four hundred pounds of honey that season. Not understanding the principle I said to him, "What are you selling me? The surplus on the end of the brood-chamber is not new. The movable frame is not new. Now, in what does your patent consist?" He replied, "you do not dare to pile your hives." Sure enough, he had the horizontal division in the brood-chamber. I did not purchase, but a friend in Benton county did purchase a few hives and the right and put his bees in; but when the bees found what was expected they gave it up and all died, and my friend became disgusted and concluded it was a fraud; but until it can be shown that those English hives have all the cog-wheels, slides, springs, thumb-screws and automatic cut-offs, so essential to a well regulated beehive, there is no use in pretending that our western patents are antedated.

We western people are jealous of our rights and do not propose to be robbed of them.

Marshalltown, Iowa.

[So far as the *patent* part of the Heddon hive, or, as for that matter, we will include all patent hives, we do not think it is of any account.

The question is, or rather the questions are these: Will a colony of bees in a Heddon hive store any more honey than they would in any good, movable-frame hive? Will a colony of bees in any hive gather honey when the flowers do not secrete it? Can one hundred pounds of honey be produced by a colony of bees at less cost in a Heddon hive than in any other hive? Is it not as much trouble to care for bees in Heddon hives as in any good hive? Will bees winter as well in the Heddon hive as they will in any other? Does not the Heddon hive cost as much or more, and is it any less work to make them than it is most other hives?

If any reader of the API can give any facts that will show that the Heddon hive is any better than other good hives we shall be glad to publish such facts.]

For the American Apiculturist.

THE API–SEASON OF 1887 — TESTED QUEENS, ETC.

Harker Brothers.

A sample copy of the API was handed us and we are much pleased with it and wish to contribute something, if possible, to add to its

interest. It is said that every little helps, so here goes.

The harvest is past and the summer is ended, and our bees are once more to winter on summer stands, packed in dry maple leaves. Last year our bees were packed the same as this, and we did not lose a single colony, although one or two came out rather weak, and another had lost its queen. The honey harvest in this section, 1887, was short and of a dark color. The past season's experience shows us that a colony with just bee space between the brood combs will store more honey in the sections than a colony of the same size that has the usual space given in a ten frame L. hive.

TESTED QUEENS.

Those who advertise queens for sale offer both tested and untested that one may take his choice: a tested queen at a fair price or an untested one for little or nothing. Allow us to say to all who contemplate purchasing queens that, while we do not blame the one who offers both tested and untested queens for sale (because they must do this in order to suit all customers) we do blame those who purchase an untested queen for 75 cents or $1.00, when they can get a good tested one for from $2.50 to $4.00 each. It is evident that we do not have to go abroad to get a hybrid queen, and we all know that an untested queen too often turns out to be nothing more than a hybrid. So, friends, in summing up, we come to this conclusion: If we want bees for honey, regardless of race and bad temper, perhaps the untested queen is the one to buy; but if we value pure stock and gentleness, then a purely mated queen is what we want.

Hornerstown, N. J.

For the American Apiculturist.

HIVING BEES.

F. C. CROSS.

THE hiving of bees that have clustered on a tree, as they often will at swarming time when the queen is allowed to fly, is, to many, a difficult operation; but with a bag fastened to a hoop and pole similar to a scoop-net it is an easy matter.

Make hoop of ¼ inch round iron and 14 inches in diameter; fasten securely to a handle 5 or 6 feet long, in such a way that when the handle is held upright the hoop will be horizontal. Make a bag of white cotton cloth two feet long, and sew neatly to the hoop. Have several poles of different lengths to which the hoop may be fastened, so as to reach bees at various heights conveniently.

After the swarm has alighted and become quiet, place the bag carefully underneath the cluster, give a quick upward push so as to jar the limb on which the bees are and cause them to fall. Lower the bag a little way, wait a few minutes, and the bees that are flying will enter the bag with the rest. If some are slow to leave the place of first clustering, reach the limb with another pole and give it a shake and you can soon lower the swarm and carry it where you like and shake out.

MOVING BEES.

To move bees short distances we are told, in the bee books, to move a few inches daily until at the place wanted; but often this is impossible. In such a case take hive when bees are all in and place where desired; some of the bees will of course go back to the old stand, give these a hive with one empty comb on which to cluster and at dark shake off in front of

the hive where they belong. Do this for three or four nights and all will learn to stay.

Montague, Mass.

From American Bee Journal.

COMB HONEY vs. EXTRACTED HONEY.

R. L. TAYLOR.

Read before the Michigan Beekeepers' Association at East Saginaw, Dec. 8, 1887.

The advantages to the apiarist of producing one kind of honey, rather than the other, depends upon his tastes and circumstances. Our choice in all the ordinary, not to say the most momentous things in life, is controlled largely by our tastes; and this controlling influence will generally be felt when we come to decide whether we shall make it our business to produce comb honey or extracted honey, and it is highly proper that this should be so.

Every one does that best which he likes best. I like best the production of comb honey, and my mind involuntarily pictures to itself superior neatness and comfort, and greater ease and more equable division of the labor of the season among the days, as appertaining to this branch; but while I continue to like this best, I must confess that when I sit down and listen calmly to reason, it is difficult to find any great difference in these respects. So there is no accounting for tastes; nevertheless, they should be consulted, for though they cannot be voluntarily created, yet they are largely formed in response to the necessities of existing conditions; and in these conditions, which, in the absence of a decided bias, must be consulted in order to determine whether it is better for any particular individual to devote his apiary to the production of comb honey or of extracted honey.

Now, what these conditions are, it is of interest to all apiarists to know; and as I view it, the chief among them are the following, namely: existing appliances, the quality of the honey produced, the season when it is obtained, and the character of the home market.

Of course, if an apiarist is supplied with the appliances necessary for the advantageous production and the care of comb honey, he should be very slow to incur the expenses incident to a complete change of these for those adapted to the production of extracted honey and *vice versa*.

Secondly, choice in the matter should often be influenced by the quality of the honey produced. It is seldom best to undertake the production of comb honey unless it is to be white and of good quality. Dark comb honey is almost always a drug in the market and sells generally at a low price—so low that when the increased amount of extracted honey that can be produced, is taken into account, the latter will be found to bring easily the more money.

Next, it is to be remembered that in the early months of the season the bees produce wax freely and work it readily, while later in the season they are rather slow to do either; and the resulting fact is, that with the otherwise equal opportunities they will usually store much more honey during the first part of the season than during the last, if they are obliged to build the comb in which to store it; so it will generally be found more profitable to use combs for extracting in which to secure the fall nectar.

Lastly, the character of the home market is to be considered. I

think it is safe to say that if three-fifths of the price of comb honey can be obtained for extracted honey, the production of the latter is the more profitable in all circumstances; and there are many home markets in which nearly or quite as much is obtained for the latter as for the former. Those who are blessed with such a market should cultivate it assiduously and keep it supplied constantly with extracted honey of the finest quality that can be produced.

It is to be noted, also, that generally the man makes the market. Some have a remarkable faculty in this way. They never have any difficulty in making a market for anything that they have to sell. Such should make the most of this talent, and thus not only greatly benefit themselves, but also to a considerable extent relieve the markets of the larger cities.

Prairie Farmer.

THE BEE'S LEGS AND FEET.

MRS. L. HARRISON.

At the late bee-convention in Chicago, Professor Cook, of Michigan, gave a very interesting and instructive lecture on the legs of the bee, with illustrations many thousand times magnified. The microscopic study of the bee has lately received a new impetus by the visit of Mr. Cowan, editor of the *British Bee Journal*, who brought to this country a microscope acknowledged by experts to be one of the finest they had ever seen.

In looking at these illustrations, it is easy to see how the bees gather up the pollen and store it in their baskets. It would seem to appear by the law of "the survival of the fittest," as age upon age has rolled away, that these baskets have increased in size. As an illustration, take the island of Cyprus, which, added to a sterile soil, has dry scorching winds, parching every thing in the form of vegetation. The inhabitants of this island never feed the bees, therefore only those survive such an ordeal which possess the greatest endurance and the largest amount of stores. Where there are colonies equal in numbers, and some of them store surplus while others are starving, it shows conclusively that some of them possess attributes which are lacking in others. They may have stronger wings, and can fly farther and faster, or have larger tongues, which enables them to reach nectar which the others cannot, or have larger receptacles for carrying pollen, thereby enabling them to rear more workers.

This fall I was showing a visiting beekeeper a feeder which was merely a solid block of wood with holes cut into it by a wobbling saw, into which the feed could be poured. He remarked that if I put that on a hive, full of syrup, in a short time it would be full of drowning bees. It had been given to me for trial, and I had never used it. As I was then feeding a colony short of winter stores, I filled it and put it on a hive. When I went to look after it, I found the feed all gone, the feeder dry and clean, and no dead bees in it.

I then filled some wooden butter dishes, and found that without any floats, it was all carried down, without any being drowned. I was puzzled at this, for if a vessel of earthenware, tin or glass, had been used in this way, it would have been full of drowning, writhing bees. It was made plain at the convention why this is so. When a bee walks on wood, his tarsi or feet take hold with a sort of grip, but he cannot

do this on a smooth surface like glass. When a bees's feet are dry, and it walks upon glass or tin, its feet secrete a sticky substance which enables it to hold to the surface.

If a pane of glass is examined with a microscope after a bee has run up and down it, its tracks can be seen, and this is what discolors the white comb, if it is left long on the hive after it is sealed. I have often noticed that glass was sticky after bees had been running up and down on it, and supposed that it was a wax secretion.

Peoria, Ill.

QUERIES.

Answers by Practical Apiarists.

WILL PURE QUEENS MISMATED PRODUCE PURE DRONES?

Query No. 43.—If a pure Italian queen mate with a drone of any other race, will her drone progeny be hybrid or pure Italian?

L. P. QUIGLEY.

Eugene Secor and G. M. Hambaugh say, pure Italian.

ANSWER BY C. C. MILLER.

Dzierzon says pure Italian, and I think he's right.

ANSWER BY R. L. TAYLOR.

The scientists say the drone progeny of a pure queen will be pure no matter what her mating.

ANSWER BY J. M. SHUCK.

Dr. Dzierzon says the drones will be pure. Father Langstroth says the same. I believe the most noted writers agree that the male progeny of a pure queen will be pure even though she be cross-mated. I shall not criticise adversely, until able to present a better theory than the great German beemaster has done.

ANSWER BY G. W. PORTER.

A pure queen of any race, according to the highest German authorities, will have pure drone progeny. We believe they are correct.

One of the difficulties in the way of correct conclusions, is to *know* that we have pure queens. The Dzierzon theory would *appear* to traverse the law that surely governs "like begets like," "each after its kind" etc., but why? where according to that theory, the egg for the male is generated by the queen, alone, irrespective of a mate or mating. Were this not so, why do fertile workers as we call them have drones alone for progeny?

ANSWER BY JOSHUA BULL.

THERE seem to be two distinct queries involved here. One in the heading to the query and another in the query itself. To the former I would say that, to me it appears to be a self-evident fact that a hybrid queen will produce hybrid drones in all cases, and under all circumstances. And I am inclined to the belief that a pure blooded queen, that has mated with a drone of another race, will also produce hybrid drones.

Notwithstanding the fact that an unmated queen can lay eggs that will produce drones only, while a mated queen can at will lay either drone, or worker eggs, it does not necessarily follow as an indisputable sequence that the drone progeny is not affected by the impregnation of the mother bee. This, I believe, is a controverted question, even among the best authorities, and, "when doctors disagree, who shall decide?"

ANSWER BY J. E. POND.

If Mr. Quigley will read the little book of "Berlepsch," called the

"Dzierzon Theory," he will get the "true inwardness" of the matter as generally understood. I don't believe such drones will be absolutely pure; others do. No one as yet has fully proved the matter by tests, and the subject is too serious to be discussed fully in this department. It is a matter of theory as yet, and until fertilization in confinement is made practical and practicable, I don't know how actual proofs can be obtained. One thing is certain, if the drone by fecundation does not affect the purity of the queen, then the Apis differs from all the other forms of animal life. It won't do, however, to make positive assertions in regard to any of the hidden mysteries attending the process of conception and the life that follows after, as nature works in her own peculiar way, and in accordance with rules that as yet are not fully understood, to say the least.

ANSWER BY PROF. COOK.

I am fully of the opinion that if a queen is pure, of any breed, the drones will be likewise pure. We know that the drone comes from an unimpregnated egg. There is no question of the truth of this. Then if the drone is affected by the mating of its mother queen, it comes —must come—through the influence of the mere presence of the sperm cells in the spermatheca of the queen. That such an influence is possible is possibly true. But from theory or science alone I should doubt it.

When Mr. Jones went to Europe I got one of his first Syrian queens so as to study this matter thoroughly; as all who have had Syrians know the drones of this race are very distinctly marked. I reared hundreds of drones from my Syrian queens mated with Italian drones, and did not see a single case of apparent hybridity. This satisfied me. I believe those who have supposed they have evidence to the contrary did not have pure queens to begin with. My experiment was very thorough as I had no question as to queens, and reared hundreds of drones.

ANSWER BY G. W. DEMAREE.

According to Dzierzon's theory such drones are of the same blood of their mother and therefore pure as the mother is pure. I know that virgin queens will produce drones without the intervention of the male, for I have tested the matter by actual experiment. But it has not been proven that such drones are capable of propagating the race. So far as I have experimented, the evidence is in favor of their impotency. If this should be confirmed by further experimentation, it would settle the question as to the necessity of the intervention of the male to propagate male and female, and would answer the question of the querist in the negative. For it is evident that if the intervention of the male is necessary to the potency of the male offspring that settles the question of purity of blood, when a male of a different race to the queen mates with her. So certain am I of this position that I reject all drones but those of purely mated queens when I am breeding for pure stock.

ANSWER BY DR. TINKER.

A pure Italian queen mated to a drone of any other race *will not* produce pure Italian drones.

In the use of the word hybrid I think it should be restricted to the radical crosses between the yellow and black races, as the Italians with Germans or Carniolans.

Crosses between the yellow races or black races should be termed

cross-bred queens or bees as the case may be.

As to the purity of the drones of mismated queens our apicultural scientists have investigated much and given us a theory; but there is something wrong somewhere, as the theory in practice don't pan out. Time and again have trials been based upon that part of the Dzierzon theory relating to fecundated queens, as follows:—A has an apiary of all black bees, with no other bees near, and wishes to Italianize it. He gets a pure Italian queen and raises a queen for each of his black stocks, and each queen is mated to a black drone. The following season he has only "pure" Italian drones. So he again rears queens from his pure stock and supersedes all of his hybrid queens; theoretically, he should now have all pure Italians, but the outcome is that he has only a lot of hybrids, for among the hatching brood of his "Italianized" colonies there are many black bees!

A remarkable fact in connection with the Dzierzon theory is that few of our prominent beekeepers will advise any one to Italianize in the above manner, yet the theory has been held without serious question for a long time.

ANSWER BY H. ALLEY.

I do not believe a pure Italian queen mated to a black drone will produce pure Italian drones. Certainly, I would not think of using the drones from such a queen in my queen-rearing apiaries. I have always used the drones from the queens that gave the best worker bees, and never the drones from a queen whose worker progeny were not handsomely and purely marked. Anyone so disposed can decide this matter in one season. Mate a pure Italian queen in June to a black drone. In August rear some pure queens and mate to the drones of the queen mated to a black drone. I am thinking that in less than one year the third generation of queens thus mated would produce about half black bees. Some of these who have answered this query have spoken about unfertile queens laying drone eggs. That proves nothing. Such queens do not seek out the drone cells in a hive in which to deposit her eggs, but like the fertile worker, her eggs are generally found in the worker cells, and the drones from such queens are dwarfs the same as those of the fertile worker. No one seems able to prove by actual experiment any statement in reply to this query.

Why cannot Professor McLain use his apparatus for fertilizing queens in confinement in trying to have queens fertilized by drones from a virgin queen, or by drones reared from a fertile worker? The results of such experiments would be much more important and interesting than his experiments in trying to fertilize queens in confinement by the drones of a fertile queen.

We hope Professor McLain will act upon this suggestion and try his hand at an early day, or during the season of 1888.

American Bee Journal.

THAT CONVENTION.

Below will be found a few of the good points made and the good things said at the last meeting of the North American Beekeepers' Society.

Franklin Wilcox — How much more extracted than comb honey can you secure?

J. A. Green—If first-class honey is produced, about twice as much; such extracted honey as is usually produced, I would say three times as much.

President Miller—Mr. Green, do you secure a poorer class of honey by using drawn combs in the sections?

J. A. Green—I think I do.

C. F. Hopkins—If the honey stored in old combs is of an inferior character, why is not extracted honey stored in old combs of a poorer quality?

J. A. Green—If the sections were left upon the hives as long as are combs of extracted honey, it probably would be; but the sections are removed as soon as finished, and the honey is more inclined to sweat when stored in old combs.

H. W. Funk—The reason probably is, that honey stored in deep cells is not so quickly and thoroughly ripened.

H. W. Funk—If comb honey is properly kept will it ever granulate?

N. N. Betsinger—No, never.

[You are mistaken Mr. B. We know that some honey will granulate, no matter how well cared for.]

Joshua Bull—I have some honey that was stored last year, in old combs, and it has not yet granulated; while some that was stored this year in newly-built combs is candied solid. All this is caused by the character of the honey.

A. I. Root—In using combs, the cells are deep, and the honey does not ripen so quickly as when the cells are filled as they are drawn.

[A pretty good point, Brother Root.]

A LAND OF MILK AND HONEY, literally, is Aroostook county, Maine, so far as I had an opportunity to see it. A farm house without beehives is almost as rare as a farmhouse without a barn; and at their pleasant grange spreads, the bread from home-raised wheat, the gilt-edged butter, and delicious honey, were prominent and toothsome features, long to be remembered. Beekeeping is not neglected by any of the Aroostook farmers, and they evidently are not afraid to put the best of their products on their own tables. The man who sells the best of everything and feeds himself and family on "seconds" is not the highest type of a farmer.—*Letter in New England Farmer.*

The American Apiculturist.

Published Monthly.

HENRY ALLEY,
MANAGER,
WENHAM, MASS.

TERMS: $1.00 PER YEAR.

Wenham, Mass., Feb. 1, 1888.

THE MANAGER'S CORNER.

Traffic in Virgin Queens.—Dr. Tinker stated in a recent article in the API that, in his opinion, there would be a large trade in virgin queens. This is one of the points on which we cannot agree with the Doctor. There may be some trading in virgin queens between dealers, but such business cannot become general as very few people who keep bees can successfully introduce virgin queens. This fact alone would kill the traffic. We cannot see where the benefit would be in such practice, notwithstanding Dr. Tinker so plainly gave his views upon this point. The fact that a virgin queen was purchased a long distance from one apiary would not insure *pure* fertilization in another apiary though it would prevent in-breeding.

One who will rear queens and permit in-breeding is not a person who conducts his apiary upon scientific principles.

While some dealers in queens exchange queens to prevent in-breeding, we have no trouble in that respect in the Bay State apiary, as by the proper use of the drone-and-queen trap, we can mate our queens to any males we choose, and when mated we know that all are purely fertilized and in no case in-bred.

We have bred queens from one mother three years in succession and never saw a drone from her. This can be done only in one way, that is, by removing the breeding queen from a full colony to a small hive, early in May. Of course, a careful record is kept of such queens as well as of all others in the apiary, or else in-breeding would be done to some extent.

We have always made it a practice to purchase Italian queens from distant apiaries for no other purpose than to prevent in-breeding. We think that most of those of whom we purchased them must have mated their queens by using the drones from *pure* mothers fertilized by impure drones, as nearly all the queens we have ever purchased, including imported ones, have proved to be hybrids.

If those dealers who send out impure queens would use a good drone-and-queen trap they would have no trouble in getting queens purely mated. There are a good many people who think they "know how" or "know it all," and think the trap amounts to nothing. Well, friends, keep on in-breeding and sending out hybrid queens and let the better methods take care of themselves.

Publishers sometimes receive very funny communications and an editor often gets good advice, and sometimes a scolding, from his readers. One good friend sent us a long article the other day to which was attached a private note from which we make this quotation:

"You may send me your journal next year (1888) provided you run it independently and are willing to print such communications as I enclose, otherwise you may return this article."

Well, we guess we can run the "Api" independently enough to suit our friend, and we shall assert our independence by informing the author of the above, that only such matter, as in our judgment is proper, will be inserted in the "Api." When we are ready to conduct the publication of our paper to suit parties who never contribute one cent towards its support, due notice will be given.

We would gladly return the "communication" in question, but as the author failed to remit the necessary amount of stamps for its return we cannot do so.

Non-Patented.— Several persons have written to us to know if the Bay State hive is patented. It is not. Any one purchasing a hive of us can make and use as many as he desires.

We claim that the B. S. Reversible hive combines more good features than any other hive in use.

There are fifty-five colonies in these in the Bay State apiary wintering upon the summer-stands all alive up to date (Jan. 15). Each colony is in perfect order. The hives are so constructed that the entrance can remain open full width during the winter. Unless it is necessary to remove dead bees, the hive needs no special care in winter as the entrance is a long, low and dark one and the light of the sun cannot penetrate, and thus induce the bees to take a flight when the weather is not warm enough. neither can the snow block the entrance, yet the hive is perfectly ventilated and only at the regular entrance.

Any one thinking of purchasing a new style hive should by all means get one of the B. S. Reversible hives and thoroughly examine every feature about it before purchasing any other.

No. 1, Vol. xxiv, of the *American Bee Journal* is on our desk, and we must confess that Editor Newman has made his paper look very nice in its new dress and new type. The head-lines of all articles are in large, clear, full-face type. The contents and general make-up of the A. B. J, are perfection. Bro. Newman is a man of progress and never takes a back step.

We can furnish the "API" and "American Bee Journal," for $1.80; without premium for $1.60.

The Api in England—We shall mail a large number of sample copies of this issue to English beekeepers. If our English subscribers, also those who receive this copy of the API, will send us the address of all beekeepers who would be most likely to become subscribers, we will gladly mail sample copies to such.

The API will be sent to subscribers in England and Scotland, one year, post-paid, at five shillings per annum.

We have made arrangements with parties in England, of whom queens reared in the Bay State apiary can be procured after June 20, 1888. See June issue of API.

Another "best bee-paper published in the English language" has appeared. It is "The Beekeepers' Review" published at Flint, Mich., by W. Z. Hutchinson. We are surprised to see that so much space is taken to review a subject of so little importance as "Disturbing bees in winter." Disturbing bees in summer would have been much better; no doubt we shall get that by and by. The first issue does not exactly meet our expectation, nevertheless, the "Review" is a good publication.

Let all those who have the least desire or idea that they can get rich in publishing a bee-paper, try their hand at it. Experience that costs nothing is worthless. Who next?

The Beekeepers' Review and the API will be mailed to one address for $1.00 per year. No premiums.

Mr. J. E. Crane of Middlebury, Vt., has been for many years the largest producer of comb honey in New England, and is well known as a successful beekeeper. Mr. Crane, like J. E. Hetherington, writes but little for the bee publications, yet we have made arrangements with him to give the readers of the API an essay on "The Production of Comb Honey." There is no one connected with beekeeping who can give more valuable information on the above subject than Mr. Crane. The essay will probably appear in our April or May issue.

At the request of a well-known beekeeper we have also made arrangements with Mr. H. B. Isham, of New Haven, Vt., to furnish an essay on the above topic. Although Mr. Isham is but little known to the beekeeping public, we are informed by his friend in Vermont that he has few peers in the art of producing comb honey. Mr. I. says: "I will describe my method which differs very much from that practised by most beekeepers."

The beekeeper who fails to read the "API" the present year will sadly miss it. Not less than 500 of our subscribers have said: "You publish the best and most practical bee-paper extant. It isn't all "taffy" either.

THE BEST BEE JOURNAL.

One of the best-known writers on Apiculture, also a well known beekeeper of great experience writes thus: "The January 1888 API is the best bee journal I ever saw. It is full of practical facts."

Whew! "There are but two bee-papers published this side of the water, that regularly give their readers able, dignified editorials." The fellow who wrote the above probably lives in Alaska. Our advice to him is to publish a bee-paper of his own. His editorials would, in all probability, be so "dignified" that all the other bee journals would have to succumb for want of support.

Go in, Brother, and give us another bee journal. Conduct your paper according to the dictates of the knowing ones. No doubt you can fill a "niche" that will be pleasing to everybody,—that is, if "dignified" editorials are all that is lacking to make a publication a success.

SPECIAL NUMBERS OF THE API.

So many of the readers of the "API" have requested us to issue other numbers containing *Essays* upon some important subjects relating to bee culture we have concluded to do so, and, if possible the March issue will be devoted largely to essays. The subject will be "PRACTICAL HINTS TO BEE-KEEPERS."

Beekeepers who have failed to read the essays on "HOW TO WINTER BEES" by the eleven prominent beekeepers, as given in the October, 1886, issue of the API, also the essays on the "PRODUCTION OF COMB HONEY" in the June, 1887, number of the API certainly have lost a rich treat. These numbers will be mailed to all subscribers free; to others at ten cents per copy.

TREATMENT OF ROBBER BEES.

The Deutsche Illustrieste Bienenzeitung has a somewhat lengthy article upon robber bees. A man who has about 400 colonies gives the following experience:

He stated the bees commenced robbing in the spring of the ye r; he started it by examining them while there was no honey flow.

The robbing became so general that he had to place forty colonies in the cellar. Every known remedy was tried without effect; as a last resort a thin sugar syrup was made and combs filled with this syrup, also vessels with syrup put out some distance from the yard. The bees at once availed themselves of this artificial flow and when it became exhausted they had forgotten all about robbing one another as in any other case where a natural honey flow has checked robbing. He states during the following ten years (being up to the present time) he has on several occasions tested the matter and always with the most satisfactory results. We would suggest trying the experiment on a small scale if at all. It is generally recommended not to expose any honey as such tends to robbing. Desperate cases may, however, require desperate remedies.—*Exchange.*

[We don't know but that the above plan will work well in Germany, but it will not do to practise it here. If a fellow wants to "jump from the frying pan into the fire" make a practical test of the above method. As soon as the bees had gathered up the syrup they would then attack any colony in the apiary and those colonies that had not acquired the habit of robbing would by the above treatment at once commence and every colony in the apiary would be ruined. An apiary of 400 colonies situated near a village or city and treated as above recommended would drive all the inhabitants out of town. A bee-paper that will publish such an item as the above should tell its readers that the result and effect of such a practice would be bad in the extreme. Useful knowledge is what is needed, not such as the above.

There are plenty of much better ways than the above to prevent and break up robbing in the apiary, all of which may be found in the bee-papers published in America.]

GIVE PROPER CREDIT.—Several bee-papers have copied the report of the Chicago convention from the AMERICAN BEE JOURNAL without giving any credit for it. As we paid the reporter for attending the sessions and writing out the proceedings, it is our private property, and any periodical which copies it should in common honesty, give the AMERICAN BEE JOURNAL proper credit for it. If it does not wish to do that, then let it send a reporter to the convention and get it in a legitimate way.—*Am. Bee Journal.*

[That is right, Brother Newman, give it to them. By the way, when the above appeared in the A. B. J. it did not apply to the API, but now we are as guilty as anybody, as one essay did appear in our January issue and not credited to the A. B. J. as it should have been. Well, we are willing to be forgiven for such an unpardonable sin, and in future will try and do something to keep Brother Newman in good humor. We hope Brother Newman will live an unlimited number of years and enjoy good health and keep the old *American Bee Journal* well up to the high standard it has attained.]

How much longer must we wait before we hear the sweet peal of the bell on that Canadian locomotive? We were warned some months ago to "look out for the engine when the bell rang." Well, we have waited a long time but nothing has materialized thus far. Show up, Brother Clark, don't keep us in suspense so long. Our faith in such matters is not equal to the strain put upon it. We shall give up, if something does not turn up pretty soon.

Honey as Food. — We desire to commend its daily use to every family in the land. We believe it to be one of the most healthful sweets that can be found, and well adapted to common use. It seems to us very desirable that Michigan should produce a large share of her own table sweets. Could honey be brought into general use, thereby creating an extensive home market for it, we believe it would tend to encourage the culture and production of honey.

It is a healthy sweet for children, and children must have sweets just as the Irishman must have potatoes. The honey-bee feeds upon the healthy juices of healthy plants, and honey partakes of the quality of the blossoms of the plants and trees from which it is gathered. The use of this article should become so common and general that a honey store or depot would be found profitable in every large town. We believe in encouraging the bee-men and women, and if every family in the land would make honey an article of daily use, in place of the unhealthy syrups, then all concerned would be benefited.—*Michigan Farmer.*

To Detect Glucose in Sugar.— It is said that the presence of glucose in sugar can be detected in this way: Take a handful of the mixture and drop it into a glass of cold water. Stir it a few minutes and you will note that the sugar cane is entirely dissolved, leaving the grape sugar undissolved at the bottom of the glass, in the form of a white, sticky substance, not at all unlike starch in looks, and quite bitter to the taste. It will not do to use hot water in your test, however, for if you do the whole thing will dissolve.—*Exchange.*

A SHARP REJOINDER.

Allow me to observe in reply to the article of M. M. Baldridge in Oct. API, that I have not the time to spend in indexing the bee-journals for M. M. Baldridge, even though I am requested to do so.

If he will look over the old numbers even of the API more carefully he will find the theory in question just as I did. He will also find that I am not the only one who has noticed it; but that in various issues (including Oct. number) two or more apiarists of good authority have discovered this theory and thought it worth while to write against it. As to putting one's ideas on paper, it is nobody's business what I write. And, as to wasting time and space, if any editor sees fit to give it a place in any journal, I am relieved of most of the responsibility.

Finally, as to the uselessness of my articles when they do appear in print, I do not want to intrude them on any one; and Mr. Baldridge will not hurt my feeling in the least if he conserves his invaluable time by skipping them.

A. NORTON.

Gonzales, Cal.

[Space is given the above merely to show one correspondent how another feels when his opinion honestly expressed in print are attacked, as Mr. Baldridge attacked the article of Mr. Norton. The former took a "forcible" method to show his disapproval of the ideas set forth by the latter. Mr. Baldridge did not intend to be ungentlemanly in his way of expressing himself; nevertheless friend Norton is displeased as will be seen by the above.

The manager of the API does not hold himself responsible for the opinions expressed by those whose articles are printed in the columns of the APICULTURIST. All correspondence worth the space is printed, but the reader is expected to separate the wheat from the chaff. The weak points in any article should be met by facts to show the wrong ideas and not by sharp and witty sayings. Don't try to spoil the effect or good points in another person's article by sharp thrusts or by ridicule. Show wherein a writer is wrong and then you will do a good thing for all concerned.

Referring again to Messrs. Norton and Baldridge we feel bound to say that they are both well able to instruct and interest the readers of the API and we hope soon to hear from them again.]

GLEANINGS FROM CORRESPONDENCE.

To The American Apiculturist,

Wenham, Mass.,

U. S. America.

Mr. Editor:

Will you kindly allow me to express, through your honored Bee Journal, my most cordial thanks for all the friendliness and cordiality which were so profusely shown to me during my memorable visit among the American and Canadian bee friends. I shall, as long as I live, take delight in looking back over my trip, and never, no never, forget the world's most able beekeepers, nor their exceeding hospitality towards me, as a stranger.

I only regret that my time was so limited, that I had no opportunity of personally calling on the many more, whose names were so well known and dear to me from the bee journals.

Respectfully yours,

Ivar S. Young,

Christiania, Norway, November, 1887.

HOW THE API IS APPRECIATED.

Sunapee, N. H., Jan. 2, 1888.

Mr. Alley: I want to thank you and express to you the appreciation of many *beginners* in beekeeping, for your efforts to enlighten and help them.

Your treatment of *special* practical topics, such as "How to Winter Bees," "Comb Honey," and "Prevention of Increase," is of priceless value to all beginners, and there are many such, who are hungering and thirsting for just such practical instruction as these essays afford them. They do much towards lifting us up to higher planes.

I see you offer a premium for the best article on "Fastening Comb Foundation in Frames and Sections." I hope you will give us the benefit of these essays. Please give us a good practical way of fastening full sheets of foundation in sections. Legions of us need instruction on this point.

Your plan of giving us several essays on these *special* subjects in a single number of the Api I wish specially to commend. They render it a priceless boon to every beekeeper.

The four queens I ordered of you last summer all came safe to hand and they were beauties. All were successfully introduced. How anxiously I watched for the appearance of the yellow bees! In proper time they appeared and were beautiful. I anticipate much pleasure with them the coming season.

J. P. Smith.

THE ITALIANS LEAD.

Joetta, Ill.

Mr. Alley: I was much pleased with the sample copies of the Apiculturist you sent me. Will soon subscribe. I am a beginner in beekeeping. I bought two colonies last spring; one swarmed and I now have three colonies of Italian bees.

It has been so dry here that the German or brown bees did not gather sufficient stores to winter, while my Italians stored about ten pounds of surplus honey. This is rather discouraging, but I do not despair.

B. F. Barb.

WINTERING BEES IN CELLARS.

Oronoco, Minn.

Mr. H. Alley: Find herewith $1.00 for Api, 1888.

I keep about one hundred colonies of bees. Very little honey in 1887, not more than enough to keep the bees through winter. I winter in cellar—temperature of cellar 40° to 42°. I think 40° in a dry cellar the best; in a damp one it should be warmer.

Geo. W. Wirt.

WORTH ONE YEAR'S SUBSCRIPTION.

Dwight, Ill.

Mr. Alley:

Although I take other bee papers, I find in looking over the two numbers of the American Apiculturist it gives one so much valuable information, not found in any other bee journal, that I am already paid for one year's subscription which I herewith enclose.

A. L. Leach.

BEST BEE JOURNAL AND BEST BEES.

Walton, Ky.

Friend Alley:

I have just received January number of Api and, if possible, it is superior to others which have preceded it already, the best in America.

I now have fifty-five colonies of bees in winter quarters, doing finely. About twenty of the colonies have queens reared from one I obtained from you in 1885, and the loss this winter so far in bees, from all twenty colonies, has not been one-half a pint.

L. Johnson.

SPECIAL NOTICES.

Inducements to Subscribers.—The present liberal inducements to subscribers will continue until March 1, 1888. After that date, the API will be mailed at the following rates:

One copy, one year $1.00.
Four copies " " 3.50
Six " " " 5.00

Any yearly subscriber can get after February 1, 1888:

One sample drone-and-queen trap, by mail, $0.30.

One selected queen, as good as we can select from 260 nucleus colonies, $.50.

One copy of the "Beekeepers' Handy Book, bound in cloth, by mail, $0.75.

No Index was sent out with Vols. IV and V, of the API. We are about ready to bind those two volumes and will then mail a complete index of each volume to all subscribers.

OUR ADVERTISERS.

While in Boston a few days ago, we ran in and saw the "Chipman engine," work. The one running was a one-horse power. It run very smoothly and noiselessly. The fuel is kerosene. Any one can run them as no experienced engineer is needed. The necessary room to set one in would not be over four feet square.

If in need of an engine we should certainly purchase one of the above.

W. T. Falconer, Jamestown, N. Y., will allow a discount of three per cent on all supplies ordered in February. His goods are noted the world over for fine quality and workmanship.

Chas. F. Muth & Son of Cincinnati, Ohio, offer the "Cold Blast Smoker", Honey Extractor and Honey-Jars for sale and a full assortment of Beekeepers' Supplies.

Chas. Dadant & Son, of Hamilton, Ill., make some of the best brands of comb foundation and guarantee every inch of it to be equal to sample.

J. Van Dusen & Sons, of Sprout Brook, N. Y., offer "Patent flat bottom comb foundation" with high side-walls, eight to ten feet to the pound.

Smith & Smith, Kenton, Ohio, offer Sections, Hives, Smokers, etc.

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We have received a copy of "The Modern Bee Farm," a book upon bee culture by Mr. Simmins, of England. Mr. Simmins has criticised our plans for rearing queens. As he does not seem to understand our method we will endeavor to put him right in a future issue of the "API."

It costs us twelve cents to send a drone-and-queen trap by mail. We have arranged with the American Express Company to deliver them at any place, where they have an office, for 10 cents each. Those who can receive the traps more conveniently by Express will please notify us when they subscribe for the API. Bear in mind that no trap will be sent unless requested to do so.

The number of pages of the API devoted to correspondence and general articles is twenty four, thus leaving eight pages for miscellaneous matter, advertisements, etc. We claim the right to use the last eight pages for our own advertisements, or for any remarks which are in keeping with the rules of a first-class publication. Sometimes we encroach upon the twenty-four pages, but not often.

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The American Apiculturist.

A Journal devoted to practical Beekeeping.

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For the American Apiculturist.

PRACTICAL HINTS TO BEEKEEPERS.

BY R. L. TAYLOR.

GENERAL REMARKS—LEARN BY EXPERIENCE — HIVES — CONTRACTION — CHAFF-HIVES A FAILURE — WINTERING BEES IN-DOORS — SPREADING BROOD — EARLY PREPARATIONS, ETC., ETC.

As our copy book used to have it, "there are many men of many minds," so while we may have "hints" from numerous experienced beekeepers, no one can be debarred from using his own judgment. One must please himself, but to do that he must think for himself. The ablest and most experienced differ among themselves in all departments of bee culture and they are likely to do so to the end. Their different mental characteristics and different circumstances are suited only with hives and other appliances of different sizes and patterns, and as one kind of hive pleases only a portion of this class it is not to be supposed that any one kind is best for all who are as yet without extended experience. Nevertheless, the recommendations and reasons of the former class are of great value to the latter. Let these consider the recommendations, study and compare the reasons of those and then decide what is best for themselves individually.

LEARN BY EXPERIENCE.

The novice in beekeeping should beware of attempting at first to manage many colonies. Two or three are enough. There are many things in the business that can only be learned satisfactorily by experience; and the fruit of experience is profitably garnered only amid comparative leisure. Thus the requirements of the right management of bees are well learned in detail and the operator reaches a position where he may intelligently decide what must be the characteristics of the hive which will best suit his turn.

HIVES.

With many colonies to manage for the production of comb honey I find best for my use a hive that is light, easily handled without disarranging the combs, and admitting of ready contraction both for early spring use and also for securing the white honey in the sections and for this latter purpose the contraction must be effected without shutting the bees out of a part of its top surface. These requirements can be satisfied only by a sectional brood-chamber. A double-walled hive for summer use is, in my judgment, out of the question.

So far as my experience goes, the

chaff-hive is a failure in this latitude for out-door wintering. With me bees always failed to winter as well in them as in single-walled hives with division-boards. I know of no good use for a hive with double walls unless it be to expedite brood-rearing in spring; and to be used for that purpose two sets of hives would be required, which would be inadmissible.

WINTERING IN-DOORS.

But I would winter bees in-doors even if chaff-hives were a success outside. I mean by in-doors some sort of a cellar or clamp. It is both safer and cheaper except it may be where frequent opportunities for flight during winter are certain. In other regions, it is safer because in all my experience I have found that if bees winter well outside they certainly will inside in any reasonably good cellar, and if they suffer outside they always suffer less inside. It is cheaper because several pounds of stores per colony are saved, because a large amount of expensive and disagreeable work in preparing bees for out-door wintering is dispensed with, and because the lives of the old bees are very much prolonged, making very early brood-rearing unnecessary.

SPREADING BROOD.

Success in the production of honey requires one's colonies to become populous as early as possible. To accomplish this, having colonies of fair strength in hives reasonably adapted in size to the strength of the colonies, the one great prerequisite is an abundance —a superabundance of stores. To hasten the rearing of brood in spring I have experimented largely with the spreading of brood and with feeding with a constantly strengthening conviction that they are never of much advantage and always of doubtful utility. Of course, stores must be given if there is not an already generous supply. Then, in the absence of any untoward casualty, with the non-meddling policy there will result a healthy and rapid increase.

EARLY PREPARATIONS.

Nothing is more important than early preparation for the honey season and for the care of swarms. The first day of June in this latitude should find a sufficient number of hives to accommodate the swarms and at least one set of cases with sections in complete readiness. Swarms and nectar will not wait for hives and sections.

In preparations for swarming, I would examine every colony in the spring before it becomes populous and see that every queen has a wing clipped; then when swarming begins be prepared with a few small wire-cloth cages, and on the issuing of a swarm step to the side of the hive and run the queen into a cage by holding the open end of it closely over and in front of her.[1] Fasten her in and put her in a safe place out of the sun. Often, if the queen is put in a basket and the basket hung in a tree the swarm in the air will cluster in the basket. Now move the old hive back and turn it around so that the entrance will be in the direction opposite to that in which it previously stood, then put the new hive on the old stand and place upon it all cases of sections which are on the old hive.

If the swarm has clustered with the queen, pour it upon the ground in front of the hive and when the bees get well started on their journey for their new home, release the queen and let her run in with the bees. If the swarm is still in

[1] How will such an arrangement work in a large apiary when some half dozen swarms issue at the same time and in different parts of the apiary? Would not the drone-and-queen trap be the most convenient cage to use? The trap was devised to meet the very want described by Mr. Taylor.—ED.

the air it will generally come to the hive prepared for it, if the cage with the queen in it be placed at the entrance. If the swarm has clustered on a tree it may be allowed to return at its leisure if there is no danger of other swarms issuing, but if there is danger of this it is better to hasten its return.

During the swarming season if the apiary is large it is very convenient, if not necessary, to have at hand two or three cotton sheets with which to cover hives to prevent swarms going where they are not wanted when they threaten to do so.

The only sure way I know of to prevent after swarms is to destroy all queen cells, but about five or six days after the prime swarm issues.

In conclusion, let me utter a warning against the absurdity of planting for honey. When comb honey is produced without any expense for honey plants, Mr. Doolittle estimates that when it is ready for market it has cost thirteen cents per pound. Let us suppose it brings fifteen cents and there is a profit of two cents per pound, and that is all there is with which to grow honey plants. If land and labor necessary to grow an acre of honey plants are worth fifteen dollars, the acre must yield 750 pounds of well ripened, surplus comb honey in order not to do more than eat up the two cents per pound profit.

Lapeer, Mich.

For the American Apiculturist.

BY J. E. POND.

PREPARING FOR THE HARVEST—EARLY MANAGEMENT OF THE APIARY—KEEP THE COLONIES WELL SUPPLIED WITH FOOD—STRONG COLONIES FOR BUSINESS.

THE spring months are always the beekeeper's busy season. If practical and forehanded, he has utilized the long winter evenings, not only in studying up ways and means, but in getting hives, frames and other appliances ready for use.

In March and April, but little can be done in New England, but that little is of the utmost importance, as upon it depends in great measure the matter of success or otherwise.

EARLY MANAGEMENT OF THE APIARY.

Each colony should be examined, thoroughly cleaned out, and the colonies equalized as far as is possible to do. If any weak colonies are found, they can be built up by drawing brood from the strong. If any are found queenless as well as weak, such can be united with others that are not queenless, though as a rule I do not advise uniting colonies, and if such are not queenless I prefer to build them up. I have found by experience that two weak colonies can be built up by furnishing them with frames of brood to good paying stocks, when if united they would have hardly made one poor colony.

KEEP THE COLONIES WELL SUPPLIED WITH FOOD.

In the matter of stores, it must be borne in mind that the spring months are emphatically the breeding season, and care must be taken that enough food is given, if lacking, not only to supply the old bees but to encourage them to rapid brood-rearing. It will astonish one who knows nothing of the matter to learn what a large quantity of food is used in the rearing of brood, and unless care is taken in this matter colonies will play out rapidly for want thereof. It requires a large force of foragers to collect a large crop of honey, and these foragers must be reared in the spring — there are several factors in the honey-gathering prob-

lem, each of which is as important as any other: first, one must know the beginning and duration of the floral source of the nectar to be gathered.

Then he must time the rearing of young bees so that they will be ready to take advantage of the incoming crop. The old bees that have passed through the long cold winter have done their whole duty and are dying off by thousands. It takes twenty-one days from the egg to the bee just emerging from its cell, and from thirteen to fifteen days more to make the complete forager. By using the above factors, one can easily solve the whole problem for his own locality. The economy of the hive is perfect, and division of labor is carried out completely. The bee one day old does the nursing and comb building, and allows its stronger sister to go out and perform the more laborious duty of gathering honey and pollen.

KEEP THE COLONIES STRONG.

The rule of Otto called the "golden rule of beekeepers," viz.; "keep all stocks strong," is as true as ever; but in these days, when patent rattle-traps, and so-called labor-saving appliances are offered, many are apt to forget the rule or depend upon some wonderful double brood-chamber, back-action, incontrovertible, and interconvertible, interchangeable-hive to do the work; but rest assured it won't do it. The only honey gatherer is the honey-bee, and patent hives without bees and proper care will only prove a snare and a delusion. To the beekeeper who combines theory and practice, and who gives proper care and attention to the work, a rich harvest is sure to come; to all others, the husks and ashes of disappointment will be the sure result.

No. Attleboro, Mass.

For the American Apiculturist.

BY G. M. DOOLITTLE.

THOROUGH KNOWLEDGE OF LOCATION—WHAT LEADS TO SUCCESS—GETTING COLONIES READY FOR THE HARVEST—COMMON SENSE IN BEEKEEPING — IMPROVING STOCK AND RACES — VIGOROUS QUEENS—SUCCESSFUL BEEKEEPING MEANS WORK.

IN this article, I shall give what I consider a few of the most important points, looking toward successful apiculture, and first along this line I put a thorough knowledge of your location. Many beekeepers do not seem to realize the importance of this as their actions show, for if they did they would not be asking "if the basswood had bloomed yet," as did a beekeeper of me last August. All work with the bees to be successfully done should be done with an eye open to the probable time of the blossoming of the main honey plants in our locality. For instance, if white clover is our main honey crop, we must commence operations with the bees at least six weeks previous to its blossoming in order to insure a good yield from it, for it takes at least six weeks to build up a colony so it will be able to do the best work on a given field of blossoms. Hence, as white clover blossoms in this latitude about June 15, we must commence to get our bees ready for it as early as the first of May. By so doing we get the bees in time for the harvest, which means success. But supposing basswood which opens July 10 to 15, to be our main harvest, then the commencing to stimulate the bees as early as the first of May would be labor thrown away, as well as a useless expenditure of honey used in producing said bees to loaf around waiting for the harvest. What man is there having a field of wheat re-

quiring the labor of twenty men to harvest it, hires the same two weeks previous to the time the wheat is ripe? Again, if our bees are weak in the spring and we do not get them ready for the harvest until after the harvest is over, they become merely consumers instead of producers or worse than useless. It would be like the man hiring his twenty men to harvest his wheat after it had become ripe and spoiled on the ground. When shall we learn to use common sense in regard to bees as we do in other things? Thus it will be seen that to be the most successful we must have a full force of bees just in the right time to take advantage of the harvest. In order to do this we must study our locality and know the time our honey-producing flowers open, and thus we shall gain a knowledge that will enable us to reap a rich harvest Next to a knowledge of our locality comes the queen. No pains should be spared along the line of improving our stock, by getting the best race of bees, and the best queen of the race we have selected as best for the whole of beekeeping centres upon her. Without a queen it would be impossible to produce a pound of honey, and just in proportion to the good qualities of our queens, is our number of pounds of surplus honey assured. Hence it becomes apparent that the better the queen is the more honey we obtain. It should always be borne in mind that to secure a good yield of honey we must have plenty of vigorous bees at the right time, and in no way can these be obtained except through a good vigorous queen. Without the bees, the flowers would bloom in vain as far as honey in our hives is concerned. We also want to know the age at which bees go into the fields for honey, when the colony is in a normal condition, in order that in all of our manipulations with them we may get bees of the proper age in each hive. After many careful experiments I find that the bee is in the egg form about three days, in the larva form about six days, and in the chrysalis form about twelve days, making a period of twenty-one days from the egg to the perfect bee. After hatching, it is sixteen days before the bee goes into the fields as a honey gatherer, making in all a period of thirty-seven days from the egg to the field laborer. If this be true, and I believe it is, it will be seen that if we would reap the best results, we must have our hives full of brood, even to overflowing, at least that length of time before the harvest. and that all manipulating at this time of year must be done in such a manner that the proper amount of bees, of the right age, be secured to each colony or swarm made by division, or otherwise. The last of which I shall speak at this time, yet by no means the least, is the apiarist. Upon his skill depends the matter of whether the investing in bees shall be profitable or not. While a knowledge of a location, plenty of bees of a vigorous race, lots of brood in season, and a good hive, have very much to do with the results of beekeeping, still the *man* has much more to do with a success or failure. Do men buy choice stock of any kind and let them take care of themselves expecting a profit from them? No; they spare no pains to have them properly cared for and give them every chance in their power that tends toward a success. Yet those same men will expect a large income from bees, on the grounds that they have them of a good breeder, and in a good hive, without doing anything for them once in six months. The idea that "bees work for nothing and board themselves" must be banished from our thoughts

before we secure much profit from them. Successful beekeeping means *work* for a man with brains enough to know that he must leave no stone unturned that tends toward success. Good bees, good hives, lots of brood and bees, the right time, etc., in the hands of such a man, are a power that rolls up tons of honey, and shows to the mass of people that there is money in the business. He will prepare his hives, surplus receptacles, etc., in winter, spread the brood in just the right time to get his bees when they will be of the most value, and the same with all the work of the apiary.

Borodino, N. Y.

For the American Apiculturist.

By Joshua Bull.

SPRING MANAGEMENT—MY SYSTEM OF MANAGEMENT—KEEPING RECORD OF COLONIES — SPREADING BROOD—WHEN TO SPREAD BROOD —GENERAL REMARKS.

With the month of March come occasionally some warm, sunshiny days which afford opportunity for bees, which have been wintered upon their summer stands, to have frequent flights; and a release from their long winter confinement seems to be improved by them as a time of great rejoicing. Their merry hum on such occasions very naturally inspires the heart of every solicitous beekeeper with fresh hope and zeal and stimulates him to enter upon the labors of the coming season with renewed courage. The first active operations in the apiary in the spring of the year may very appropriately be termed spring management.

And this is perhaps the most critical part in the science of beekeeping, and may require more of art, tact and skill in order to achieve the most desirable results and have our bees in first-class order for the harvest when the first honey flow comes, than at any other period of the year. Although we cannot compel, we can stimulate and assist them in the work of progeneration by carefully providing for all their needs, keeping them warm, comfortable and happy. No set of inflexible rules can here be given, specifying just what would be the best thing to do in every case and under all circumstances. The apiarist's best judgment should decide what needs to be done and the proper time to do it. Nevertheless, we should have some system to work by and one which can be varied as occasion requires.

MY SYSTEM OF SPRING MANAGEMENT.

I will now endeavor to describe my system of spring management, not claiming that it is superior to any other, but that it is well adapted to my peculiar notions and that I have, I believe, obtained a fair degree of success therewith. I call it my system, not because it is original with me, for I gratefully acknowledge my indebtedness to various apicultural writers for the leading ideas therein. I have only arranged the details to suit my own ideal.

KEEPING RECORD OF COLONIES.

I have all my queens numbered with their colonies; the number is painted in figures on a piece of tin and fastened to the hive with a small screw. If the queen represented by any number is removed to another hive, by uniting or dividing colonies, by swarming or from any other cause, this number is carried with her and attached to her new home, so that the same number always represents the same queen so long as she lives.

Before commencing operations with the bees in spring, I procure a small blank book. At the top of the pages in this book, I place figures corresponding to the number of colonies, allowing two or more pages to each colony. When a suitable warm day comes, I proceed to overhaul my bees, commencing with whatever colony I may think needs the most immediate attention. If I find by examination that they have more combs than they can occupy, I take away the unoccupied one; see that they have plenty of food left them; clean the dead bees and other accumulations out of the hive; move up the division-board close to the remaining combs; fill in back of the division-board with dry sawdust or chaff; lay a dry quilt over the cluster and over the quilt lay on an old newspaper to retain the heat; replace the sawdust cushion; contract the entrance in proportion to the strength of the colony and close up the hive; but before leaving them I take up the blank book mentioned above, open it to the figures at the top of page corresponding to the number of the colony which has just been examined, and under this number I make an entry, something like the following, to be varied of course according to circumstances:

1. Queen all right.
2. Strong in bees, condition healthy.
3. Stores plenty.
4. Brood and eggs in three combs.
5. Whole number of combs in hive at this date, five.

March 15, 1887.

This done and I am ready to pass on to the next and do likewise, and so on until all are attended to. A little fixing up in this way, when the first warm days in early spring begin to arouse them into activity, will seem to help them along wonderfully, if the weather is such that it can be done without too much exposure to the bees. Once having done this, if all have a sufficiency of stores, they ought not to be molested again until they begin to bring in fresh pollen; brood-rearing will then progress more vigorously and they may soon need more room and more combs. When such is the case (and this can generally be determined by rolling back one corner of the quilt and looking into the brood-nest); if the space which they already have is well packed with bees, move back the division-board and give them another comb; if it contains a little honey all the better, at the side of the brood-nest.

SPREADING BROOD.

If it is clearly evident that young bees are now hatching out faster than the old ones are dying off (for it is a well-known fact that old bees sometimes disappear very rapidly at this season of the year), it may be best to spread the combs which were in the hives, if they are well filled with brood, and insert an empty comb right into the centre of the brood-nest; but be very careful not to spread the brood any faster than there is an increase of bees to cover, care for and protect from cold; otherwise the damage done thereby will more than counteract any advantage that may have been gained. Past experience has convinced me that the spreading of brood with judicious management may be productive of highly beneficial results. On the other hand, with a little mismanagement, the whole business would be a mistake with correspondingly bad effects. The greatest danger lies in the liability of extending the brood beyond the capacity of the bees to keep warm during any period of cold weather which might occur.

If this one difficulty be carefully obviated, we may reasonably expect that our labors in this direction will be crowned with success; but, however anxious we may feel to "hurry up business," we must not allow our zeal to supersede our better judgment.

WHEN TO SPREAD BROOD.

After we once get bees enough in the hive to make it safe to commence to spread the brood, it may be best to continue to do so by putting an empty comb in the centre of the brood-nest as often as they need more room, and the stronger the colony gets the more frequently can this operation be repeated. Discretion must be exercised to determine what needs to be done and when to do it.

Do not be continually fussing with them by overhauling them to see how they are getting along just to satisfy curiosity. One of the hardest things for the writer of this to learn about the management of bees was to learn to let them alone when they did not need any attention. It is an easy matter to handle bees to death in the spring of the year. When it is necessary to manipulate bees for any purpose, always seek an opportunity for doing it when the weather is warm enough for them to fly freely without becoming chilled; for if you overhaul them on a cool or cloudy day, when a disagreeable wind is blowing, they are liable to ball their queen and destroy her, if you do not see to it and release her. When they once get into the notion of balling their queen, some colonies will do so every time their hive is opened; and this may account for the loss of many of the queens which are reported missing every spring.

Every time that any colony has an overhauling, a note should be made of any change in the condition thereof, in the aforementioned book. From this record the apiarist can refresh his memory, at any time, concerning the condition of each and every one of his colonies, without going into the bee-yard to open a hive until such time as some colonies may need further attention.

No specified time can be fixed as to just how often they will need more room and more combs or some other necessary care; the best judgment of the apiarist must be constantly exercised in all the details, and then the state of the weather will have much to do with the amount of progress that can be made. When the bees can gather honey and pollen plentifully they will improve much faster than in cool, dull weather. Under favorable conditions, if the foregoing suggestions are faithfully carried out, we shall be likely to have good, strong colonies, overflowing with bees, all ready for business, by the time that the white honey harvest will commence. The frequent spreading of the brood keeps down the swarming fever, and we are thus enabled to get very powerful colonies; at least, such has been my experience. In some cases I have succeeded in having as many as sixteen or eighteen combs all well filled with brood at the same time, the progeny of one queen, without any help whatever except as above given. No brood had been drawn from other colonies to build them up at any time; but those were exceptional cases and exceptionally good queens.

No attempt has been made to make this an exhaustive article upon the subject of spring management; there are many things left unsaid that might have been said, but if I have succeeded in suggesting any hints that may help others one step onward in the way of success then I shall not have labored in vain.

Our aim and object in spring management are to get all the bees we can ready for a working force when the honey harvest comes; but, when the harvest begins, a different system of practice will be required, of which I may have something to say hereafter.

Seymour, Wis.

For the American Apiculturist.

By G. W. Demaree.

LOCATING THE APIARY — BEST HIVE —BEST BEES FOR ALL PURPOSES— WINTERING BEES — SPRING MANAGEMENT — EMPTY SECTIONS — HOME MARKET, ETC.

Nearly all, if not all, the older beekeepers have labored under the disadvantage of having commenced the pursuit of beekeeping at the place where they were located at the time they received the first stroke of the "bee fever." This made the business of beekeeping very uncertain with many of them, to say the least. Let me illustrate this point. My location has a good white clover range for bees, and this is the main source for surplus in all the older states; but my location is surrounded by a closely cultivated district, and a nice state of husbandry. All weeds are cut from the pasture lands and waste places, and my bees are deprived of fall pasture except from heartsease (smartweed) which flourishes only in wet seasons. Hence I must feed my bees in the fall more or less and this is a heavy draw on the profit side of the account kept with the bees. Some years ago I advised a friend of mine to start an apiary at his place—he lived but seven miles from me—as he had about the same white clover range that I had and the hills about him were covered with the little white and purple asters which would supply his bees with winter stores. He took my advice, and time is proving that his location is twenty per cent better than mine on account of the waste lands about him which abound with fall honey-producing flora. Let us pause here and take the "hint" that the difference in a good and a poor location may make all the difference between success and failure.

THE HIVE BEST FOR ALL PURPOSES.

My views on this subject are not radical. The bee-literature of the past clearly shows that men have succeeded well, and equally well, who have used hives that differ as much in construction, as any of the new hives differ from the old ones, and from each other. These facts are a broad "hint" to the honey producer, that the difference in hives is not so great as many profess to believe. Any good movable-frame hive, by the application of a little ingenuity wil give satisfactory results. I will not consume space by discussing this point here, as a description of my favorite hive may be found on pages 14 and 15 January issue of the Apiculturist. If the hive is light, and substantial, and capable of being "tiered" to the best advantage, without giving too much room at one time, no other hive, no matter how costly or complicated, will beat it. The "tiering up" system is essential to the largest yield of the best quality of honey, and I believe the best way is to *tier above* the brood department of the hive.

THE BEST BEES FOR ALL PURPOSES.

It is generally conceded that Italian bees are the best bees for all purposes. But as it requires time and money to keep the race pure in any vicinity where there are black bees we are induced to say that Italians and the first cross

between them and black bees make a strong working apiary. But all subsequent cross with hybrids should be avoided. Such crosses have never failed to be inferior to the first crosses, in my apiary.

WINTERING BEES ON SUMMER STAND.

To winter bees safely on the summer stands the apiarist should study the climate of his locality and prepare his bees for winter to suit his climate. But there is one condition in wintering bees that is common to every place and that is plenty of winter stores. This I discovered years ago when transferring bees from box-hives. I found that plenty of honey in the box-hive meant a strong colony of bees, and light stores always brought through the winter a small colony of bees. Bees do not waste and dwindle away when surrounded with an abundance of honey as they do when their stores are limited. We may take a "hint" here and have strong colonies in the spring, if disease does not overtake our bees in their long winter confinement.

SPRING MANAGEMENT OF BEES.

I want my bees to have such a bountiful supply of stores that they do not have to be disturbed in the early spring till they begin to gather honey and pollen from the early bloom. After this no harm will come from any necessary manipulation. All upward ventilation through absorbents or otherwise should be prevented as soon as spring breeding commences. Bees will manage any accumulation of moisture at that season of the year. In fact they need water to carry on breeding and must have it, if they have to carry it from a distance. The surplus cases should go on the hives as soon as the weather will admit with safety to the bees, for if bees once get the habit of cramming the brood-chamber with honey they will lose much valuable time in starting work in the surplus cases. I suspect that bad management along this line is at the bottom of the complaint of those who "can't get their bees to enter the surplus cases." Bees are governed more by "habit" than any of the domestic animals with which we have to do, and they must be watched closely. When bees get in the habit of storing their honey in the surplus cases they will neglect the brood-chamber in the fall; for this reason I confine my bees to the brood-nest at the close of the heated term so as to have the brood-chamber supplied with honey, if there is a fall flow.

EMPTY SECTION COMBS BROUGHT OVER.

Quite a number of persons have complained that the empty sections when used again do not give them first-class honey. This trouble can be overcome by shaving the combs down till the cells are about one-half inch deep. If managed in this way the sections will be first-class every time. The job is easily and rapidly done by a Bingham uncapping knife if kept hot by immersing it in hot water.

TAKING SURPLUS HONEY.

I am never in a hurry to take surplus honey from the hives, if I have a supply of surplus cases. By the tiering-up plan I keep the honey at the top where the finishing process can go on without the bees soiling the combs. Honey managed in this way will ship better and look better in the market than if it was a little whiter at the start by reason of being taken from the bees the moment it is sealed. And its superior quality will compensate for the slight difference in appearance. *Good quality* will win in the end.

HOW TO BUILD UP A HOME MARKET.

Perseverance is the main factor in accomplishing this desirable end. Some small circulars sent out by the apiarist, explaining the manner of taking pure honey from the comb, and some directions about its management to keep it fresh and free from fermentation, how to reduce granulated honey to its natural or liquid state, its different uses for cooking and table purposes, its healthfulness, etc., should be delivered, one to each family in the circuit of the "home market," and above all, samples of pure honey taken from the comb, should be left with every family that is not acquainted with the article in that shape. If the name "extracted honey" is good enough for you, you can put that "hifalutin" name in your circulars, but it will be a "mill stone" about the neck of your enterprise, so far as your home market is concerned. If such is not the case your experience will differ from mine. A smart boy can be trained to sell honey in and out of the comb, from a light spring wagon provided with all the necessary conveniences for handling and weighing the honey. He should be directed to leave some honey at every new home he enters and fails to make a sale of honey. A circular should be left at each house he visits. In this way hunderds of dollars can be taken in, at prices enough better than city market prices to pay the extra expenses of disposing of honey in this way. After the home market has been well established, the spring-wagon system will not be necessary, except to widen the business and to deliver orders for honey in the towns, etc.

Christiansburg, Ky.

For the American Apiculturist.

BY EUGENE SECOR.

POOR QUALITY HONEY—THE EXTRACTOR—HONEY A LUXURY—THE SUCCESSFUL HONEY PRODUCER.

We sometimes affect righteous indignation toward those who adulterate honey. No words are caustic enough to express our wrathful ebullitions. But did it ever occur to you that the possibilities of such nefarious practices are greatly enhanced by the poor quality of *unadulterated* honey, especially extracted, often found on the market?

Probably more injury has been done the beekeeping interest by putting upon the market poor honey—unripe, sour, thin or detestable in quality — than by commercial adulterations. I only pretend to voice my own convictions when I say that the extractor, regarded by many as the greatest invention in modern apiarian appliances, has done the industry more harm than good. It is an easy matter to concoct a mixture, independent of the aid of bees, that will taste better to the average purchaser of sweets than some of the so-called honey got with the aid of the extractor. When a novice first gets an extractor and finds how easy it is to "sling" honey, he is, perhaps, anxious to astonish his neighbors by his wonderfully superior "beelore." He is after large yields with no thought of quality. He extracts early and often — as the trained ward politician in the next precinct votes. Instead of honey, he extracts nectar. Instead of a rich, oily, aromatic delicacy whose fragrant memories will linger long after the joy has passed, he has some sweetened water that will hasten to convert itself into vinegar, as if ashamed to attempt to counterfeit what it can never equal.

If nothing but the best were sold, it would be impossible to im-

itate it successfully. Honey is considered a luxury in America. Luxuries for the table must appeal to the eye, or the taste or both. If we want our honey on the tables of the rich it must win its way there on its merits. It must be proved in the same manner as the pudding—in the eating. Honey that is good enough to go into the dining-rooms of the wealthy will find its way into the kitchen of the laboring man—for there is nothing too good for the working man in this country to eat. His taste is educated. He lives more royally than royalty itself a hundred years ago. We can no more deceive the taste of the poor than the rich, and the former, or at least the middle class, are among the best customers. Now if we want to cater to the taste of the consumer, we must produce such an article as will please, when bought. The time was when honey was honey, and little was known of the different grades. Not so now. The successful honey producer of the future is to be the one who not only sells nothing but a ripe article, but who puts it in such attractive packages as the buyer delights to take home with him when he has company to tea.

Forest City, Iowa.

For the American Apiculturist.

By Dr. C. C. Miller.

ONE SIZE SECTIONS—OVERSTOCKING.

Every producer should of course study the wants of his own market, and govern himself accordingly. If two-pound sections are received with more favor by his customers, two-pound sections are the ones for him to use, no matter if one-pound bring a higher price in other markets; and so with other sizes. But to a great extent it lies largely in the power of the beekeeper to decide upon one size or another of section, just as may suit his convenience, without protest from his customers. Anyone who has tried having different sizes of sections in his apiary at the same time need not be told that the nuisance is something like that of having different hives and frames in the same apiary. One year as a matter of experiment, I tried sections of five different sizes or widths and part of them remained unfilled to annoy me for two years afterward.

If there were no other reason for uniformity there is a strong one in this, that supply dealers and manufacturers are more apt to have on hand a standard article, and if the bulk of beekeepers use a section of a given size, manufacturers can make them up in large quantities at a lower price. They will feel safe in working ahead of the demand and getting a stock on hand. Whatever in this direction is for the interest of the manufacturer results in a lighter demand on the purse of the beekeeper.

OVERSTOCKING.

Although not much is known with certainty about overstocking, enough is known to make many a one wish to know more about it. When a man has more than a hundred colonies it becomes a serious question with him "Shall I gain or lose to have in my apiary 150 colonies?" The number of those who pooh-poohed at any danger of overstocking is becoming much smaller than formerly. No man of common sense, who admits that bees depend upon the surrounding flora and that their range of flight is limited, can fail to see that, beyond a certain point, be that point 100 or 1000, the number of colonies in an apiary cannot be increased without danger of disaster. It is doubtful

if we can ever reach any very accurate conclusions, but something can be done by close reasoning and observation — certainly some progress has been made.

If Jones has 100 colonies and his pasturage on an average of years will support 125 colonies, then, if Jones can take care of them, he will be the gainer to increase his apiary to the number of 125. If 125 be the limit that can be kept busy, then an increase to 150 can only be made at a loss and if he decides to go beyond the 125 it will only be profitably done by establishing one or more out apiaries. Then the question comes as to the matter of distance between apiaries. Toward the solution of this some progress has been made, and I think it is pretty gen erally agreed that out-apiaries neenot be planted so far apart as wa formerly thought necessary. Per haps about three miles will be pretty generally agreed upon as far enough apart. Further experience and observation may somewhat modify this view.

As to the number to be kept in one apiary for greatest profit, whatever progress is made in arriving at any conclusion will be made slowly. If each one will tell all he knows about it, how many is the largest number he has ever known to be kept in one locality with profit, or still better, what number showed pretty plainly that the locality was overstocked, the collation of such facts, through a series of years, will materially help in the solution of the problem. In my own locality, I kept one year about 200 colonies in one apiary. I *think* 100 colonies would have been much more profitable, but there is the trouble, I *think*, I don't *know*. The 200 colonies made a very poor success but how can I be sure that 100 would have done any better? Was it not the season instead of the number of colonies? Nevertheless, I think pretty strongly that somewhere from 75 to 125 (a pretty wide range, I admit) is the best number to be kept in one apiary in my locality for best results. Whoever can help me, in any degree, to decide the matter will deserve thanks, not only from me but from hundreds of others who are deeply interested.

Marengo, Ill.

For the American Apiculturist.

BY HENRY ALLEY.

OVERSTOCKING — PLANTING FOR HONEY — HOME MARKET — HONEY ON COMMISSION—EXPERIMENTING — FOUL BROOD — HIVES — FEEDING, ETC.

It seems to us that essays on the subject of "Practical Hints," by such well-known beekeepers as those who were invited to write them for this issue of the APICULTURIST, must be of great value alike to the old veteran and novice in bee culture.

Although at this date not any manuscript for the essays has reached us, yet we have an idea that the readers of the API will get the most valuable hints which, if followed, will, as a rule, lead to success in most cases. The contributors are known as among some of the best and most practical writers connected with bee culture.

Perhaps it will not be out of place if the manager of the API makes an attempt to give a few practical hints to his readers.

OVERSTOCKING.

The enterprising Yankee when he enters most any kind of business is very apt to go in pretty steep and in some cases overdo the thing and fails, or gets discouraged, not having the patience to wait for returns which are sure to come sooner or later.

One reason why a good many who have started in beekeeping have failed was because of overstocking. If one hundred colonies are placed in a location where there is but forage enough to support properly twenty-five or fifty colonies, one will not have long to wait to know that beekeeping in such a place cannot be made a success. From twenty-five to fifty colonies of bees will do well five seasons out of six in most any country town in New England. I refer to a location where there is no basswood forage, and where the bees depend largely on fruit blossoms and white clover and have a fair chance to forage on late fall flowers. Well, now if twenty-five colonies do well, do not increase the apiary to fifty or more colonies at one jump. If twenty-five or thirty colonies have done extra well for three years in succession, the apiary may safely be increased to fifty colonies. Then wait two years, and if the fifty colonies seem to store large amounts of surplus honey, the apiary can be further increased. Do not attempt to make beekeeping a special business unless your apiary is situated where basswood and white clover are very abundant.

PLANTING FOR HONEY.

The statements made in the Api of the new honey plants by Mr. Tyrrel and others have satisfied me that it will pay to plant for honey. If a plant can be found that will produce honey of a good quality in a wet season, and one on which bees will work while the weather is such that white clover and other bloom yield no honey, then the beekeeper has nothing to fear so far as a honey dearth is concerned. All who keep bees are not so situated that they can plant for honey, yet in most country places there is plenty of waste land that may be secured at a low price and on which one may plant and utilize for the use of his apiary; therefore we say, plant for honey, it will pay.

HOME MARKET.

The small beekeeper, and those who have other business besides keeping bees are not prepared to ship their honey to distant cities for a market in order to find a ready sale for the products of their apiaries. It does not require very extensive or expensive advertising to develop a home market. Place the price of your honey at such a low figure that everyone can afford to purchase it. Let the people who think they can go out of town and get better honey by paying higher prices go and do it. Have a good quality of honey where all who desire can taste it, and nine out of every ten persons who do so will purchase more or less for their families. If you have a poor quality of honey, be honest and tell each purchaser that you have honey but that the quality is not as good as it is some seasons. As to which is the best and most profitable to raise, comb or extracted honey, each one must decide that matter for himself. The demand in any particular locality will be the best criterion to go by.

Do not tell your townspeople that your bees have "made" a big lot of honey. One need not give himself or his business away to his neighbors. A man who kept bees in Wenham, some twenty years ago, was so well pleased with his success one season that he told his neighbors all about it. The man who kept the bees had but one acre of land, and those who owned more or less in the same town accused the beekeeper of robbing them. They said his bees must have got all the honey away from home and in less than two years he was driven bees and all, from town. 'Tis a danger-

ous thing to make known your success in any kind of business.

SHIPPING HONEY TO COMMISSION MEN.

I have always discouraged shipping honey to be sold on commission. The commission man has but two motives in dealing in honey: first, the profit or percentage; second, to get it out of his way as soon as possible. The commission merchant gets his percentage whether the producer gets any profit or not,—that does not concern the merchant.

I know it is almost impossible to get any dealer to take honey by the tons or carload and pay cash for it, yet there are some who will do it. In my opinion, it would be a good move for the large honey producers to lease a building in cities or large towns and ship their honey there and employ an honest and trusty person to sell it. If such places are established, a uniform price might be placed upon honey. The large honey producers could purchase the crop of the small bee-keepers, and thus, to a great extent, control the markets. This is an experiment worth testing, and it may work well.

EXPERIMENTING IN THE APIARY.

If there are any people who have a strong desire to conduct experiments in their vocation, it is bee-keepers; and we think nearly all who keep bees have experimented more or less: the testing of different styles and sizes of frames, hives, honey-boards, division-boards, feeders, etc., etc. This is all right. Well conducted and careful experiments are just what will bring perfection in the end. Continue to experiment and thus amuse and instruct yourself. We have spent hundreds of days in experimenting and intend to keep at it until perfection has been reached. One of the practical and best objects to experiment for is the improvement in a race or strain of bees. Cross up the different races and strains, and if a careful record is kept of such experiments the results will be beneficial and satisfactory to yourselves, and to the beekeeping fraternity if such experiments are made public. Experimenting with frames and hives will hardly prove as satisfactory as many other experiments. Experiments in contraction of the brood-chamber or for building up colonies rapidly in the spring will be productive of good results, and so also will experiments in queen-rearing and fertilization of queens by particular drones. Don't waste much time in inventing bee-feeders. The simplest kind of an arrangement for a feeder and feeding bees is the best, and all such are well-known to every person who reads and keeps himself posted.

FOUL BROOD.

Foul brood is the terror of the beekeeper in some localities. To experiment for its cure, results in loss of time and money. An apiary in which this disease has once got a good hold is in the condition of a pest-house to which the public may have free access. All the apiaries for miles around will sooner or later be infected by foul brood unless vigorous and prompt measures are taken to annihilate everything of the combs, bees and honey, and in most cases, the hives should be destroyed. We shall advise you to destroy all as soon as possible after the disease has made its appearance. First get some person who knows his business to examine the combs and brood. If he decides that your bees are infected by foul brood, lose no time in ridding your apiary of it. When you have thoroughly cleaned up everything that might be a means of communicating the disease to other colo-

nies, then go a long distance and get a new lot of bees after thoroughly examining the stock and assuring yourself that the colonies you can purchase are perfectly healthy in all respects.

ABOUT HIVES.

If you have a hive in use that seems to be well adapted to your location, I would not change even if satisfied that some one else has a better one. 'Tis best to let well enough alone. Nevertheless, it would be hard to find a beekeeper who is thoroughly satisfied with the hive he uses, since no hive is perfect, and we never saw a beekeeper who was not always ready to test a hive when it was plain to him that some other hive had many good features that his own did not possess. Under such circumstances only would we advise any one to purchase new hives and other bee-fixtures. I despise a beehive that is large enough, or has lumber enough in it to construct a tenement house. We have two hives in our apiary sent us for trial, very good hives, but they are large enough for a hen-coop. Why make a hive that has space enough between the outer case and brood-chamber for ten bushels of shavings to pack it for winter. Such large hives are a nuisance in the apiary.

FEEDING ARTIFICIAL POLLEN.

For thirty years we have made it a practice to feed wheat flour to bees for early pollen. I know that nearly all who speak of this matter will say "feed rye meal." We know from long experience that wheat-flour is the proper material to give the bees. We take the cap of an L. hive, invert it, place the flour in it and then set it under the south side of a building, or in any sheltered place, and very near the apiary, too. The bees are easily started to work in the flour by placing a small piece of comb containing honey in the flour. We also place a piece of dry comb in the box for the bees to light upon and work the flour into little pellets upon their legs. If bees need pollen before it can be obtained from early flowers, why not give them such material that they can quickly take into the hive? They can do it with flour.

SOCIALITY AMONG BEEKEEPERS.

Beekeepers as a class are not apt to "hide their light under a bushel." As a rule, they often meet and talk about bees and bee matters, and talk over the little experiments they have been working upon. In this way much valuable information has been gained to all concerned.

When there were beekeepers in this vicinity with whom I could meet and talk bees for a while I could enjoy myself. Now the nearest beekeeper is four miles away and then we do not have the time to spend in such a way. Our advice is to meet and converse upon bees as often as possible, talk over the best methods for wintering bees, best way to market honey, best hives, etc.

Wenham, Mass.

For the American Apiculturist.

QUEEN-EXCLUDING HONEY-BOARDS.

DR. G. L. TINKER.

MANY inquiries have been received of late pertaining to this subject and I will endeavor to answer through the APICULTURIST.

Two kinds of these boards have been in use:—one made of a plain sheet of perforated zinc bound at the edges, and of a size to cover the brood-chamber, and the other made of wood slats and narrow

strips of perforated zinc, the zinc being supported in saw kerfs in the edges of the slates. The former has met with some favor but has many objections, the worst being in my opinion, that these plain zinc boards are a hindrance to the workers, especially in a strong colony. The difficulty is not an inability to pass through the perforations but in the *time* it takes to get through. The zinc being smooth and the perforations far apart, the bees find no foothold to draw themselves up and through the perforations readily.

It seems to me if beekeepers are to use these boards with profit they must be constructed in a way to overcome all hindrances to the workers in passing through them. Fortunately, this can be successfully accomplished by the use of a properly constructed wood and zinc honey-board. As generally constructed, even these are little, if any, better than the plain zinc boards, except that they are less trouble for the beekeeper to use.

In the first boards constructed, I used strips of zinc having only one row of perforations but finding that such boards did not give enough spaces for the bees to pass freely, I began to use strips having two and three rows of perforations. They answered better but still were not satisfactory. I noticed that where the perforations in the zinc came near the wood that the bees were able to get a foothold on the wood and so pass up through the board as readily as if it was not in their way. Acting upon this hint, I constructed boards, with narrow pieces of zinc ($\frac{3}{4}$ inch wide) having two rows of perforations and let the zinc into the wood, so the edge of the perforations came within $\frac{1}{32}$ of an inch of the wood. For an eight frame hive I used eight slats and seven of the strips having the two rows of perforations. This gave about 300 perforations, through each one of which three bees could easily pass at once. The operation of these boards was perfect and altogether satisfactory.

English beekeepers used the zinc honey-boards before they were used in this country, but the general verdict was against them and they were finally discarded as being a hindrance to the workers. Now I venture that their boards were not properly constructed as they never used a wood and zinc honey-board. I do not regard their tests as affecting in any way the merits of perforated queen-excluding zinc.

Now as to the use of these boards. First, they are indispensable whenever we contract the brood-chamber in working for comb honey. This procedure, although it has often been carried to extremes, is without doubt a practical and profitable one. It is not best to contract an average colony to a space less than six Langstroth brood-frames or about 800 square inches of brood comb. With a space equal to only four or five L. frames, I find it impossible to get comb honey without more or less bee-bread in it and that renders it unfit for market.

The other use to which these boards have been put is in producing extracted honey. In storyfying brood-chambers the queen can be confined to the lower one and all extracting done from the upper ones; when, if a queen-excluding honey-board is not used, the queen often carries on her work through two and three brood chambers. As it seems to be generally admitted that a first-class article of extracted honey cannot be taken from combs containing unsealed brood, the value of queen-excluding honey-boards becomes fully apparent.

The wood and zinc honey-board may be made to take the place of Mr. Heddon's "break joint" slatted honey-board, for the latter does not prevent the queen from starting brood in the supers and especially when running for extracted honey. Many suppose the queen stays near her brood and never surveys the supers to any great extent, but in my observation she does, and when she finds a nice lot of brood combs there it is very natural she should make use of them. In producing comb honey, the queen is not apt to start brood in the sections, if the brood-chamber is large, whether the "break joint" honey-board is used or not. The use of such boards is to prevent the building of brace combs between the section super and the brood-chamber, thereby facilitating the handling of the supers and keeping unprotected sections from being soiled, as the bees build few brace combs above such honey-boards.

I desire to add that I was not only the first to construct the wood and zinc honey-board but the first to conceive of the idea of supporting narrow pieces of perforated zinc in the manner here described.

New Phila., O.

For the American Apiculturist.

THE PROPER TEMPERATURE OF BEE CELLARS.

A. C. TYRRELL.

So much has been written on the above subject that the heading of this article will doubtless prevent an *impartial* perusal thereof by those who consider they long ere this learned *all* there is to be known about wintering bees successfully in caves or cellars. But I opine many decades will elapse ere the "A B C" class in apiculture graduates.

What I am about to advocate I am well aware will not meet with approval from the majority of beekeepers throughout the country—for my experiments (not assumptions nor mere theories) will not comport with what they term reason or common sense. But *audi alteram partem* and then condemn or award the full measure of praise if the *proof* therein presented for consideration sustains my assertions.

In the matter of temperature and ventilation, I have endeavored to post myself for they are the most *important* factors—all others are of minor importance, as matters over which we have no control, such as honey-dew, improper food (?), etc., speculative fancies, formative hypothesis to meet the exigency of exceptional and isolated cases.

Whenever it has been my good fortune to make a discovery, seemingly outside the usual order of things, it has been the practice with me to watch patiently and experiment for at least three seasons before acquainting the public with the result of my observations, so often do our fondest hopes and brightest dreams prove to be chimerical.

And of those composing the great fraternity of beekeepers from the Orient to the Occident, having many a pet theory and hobby horse to ride, when called upon to give a "reason for the hope that is within them," at once "trot out" *experience* of longer or shorter duration, in accordance with the importance of the case, or amount of pressure brought to bear by adherents of the opposite side of the question.

For a long time I was of the opinion that my bee cellar was *too warm*, but as so many of my brother apiarists insisted that from 41° to 45° (some said 52°) was the proper

standard, I endeavored so to regulate the cellar that the temperature would not fall below 45° Fahrenheit, but signally failed to exclude frost, and it was well for me in a financial point of view, and certainly better for the bees, that I *did fail*. During the winter of '85 and the following winter the thermometer in my cellar, after the cold weather set in (say about half of the winter), registered 30°, occasionally dropping down to 28°, and strange (?) to say, the bees without an exception wintered *perfectly*.

Last winter the apartment was made much warmer than ever before, the mercury indicating 45° (sometimes higher), according to Hoyle among beekeepers, but the loss of bees was *much greater* than that of the preceding winters. Was this phenomenal or the legitimate result of cause and effect?

November 22 (this year) our bees were put into the cellar, I having previously provided tight outside and inner doors, stopping all crevices besides making ample provisions for ventilation. The weather has been with one exception unusually warm, and in consequence the thermometer in the cellar has uniformly marked 50°, until night before last I succeeded (by opening wide all outside doors and raising the curtains used for darkening the apartment) in lowering the temperature to 42° and last night to 32°.

Up to this time the stronger colonies have been very restless, necessitating the use of wire-cloth to confine them to their respective hives. Night and day it was distressing to hear them "roar," so different from the *low*, gentle hum of contentment. There is no mistaking the cause or sound.

Although there were no symptoms of dysentery, the death rate was fearful, and would soon have depleted the colonies had it not been checked. When the mercury dropped to 42° the change inside the hives was apparent at once; but when it reached 32° the bees went into the hives and remained perfectly quiet and contented.

Whenever the temperature rises above 42° Fahrenheit in my cellar, the bees become restive and trail out of their hives as if in the act of attacking maranders. Hence I say that from 32° to 38° is the proper temperature of a bee-cellar or cave; and I do not fear for the safety of my bees if it drops occasionally to 28°.

If I could regulate the temperature at all times, I would not allow it to rise above 40°, for I am satisfied that *heat* is more injurious to bees in *confinement* than cold, provided the cellar is dry and well-ventilated. How *many*, if any, of the beekeepers who have written on the subject, have noted the condition of a *strong* colony, as to *bodily heat* generated? *How* do they *know* that 45° to 50° is "about right?" that if the temperature falls below these figures that the bees become *restless*, exercise violently to keep *warm*, consume more honey than is necessary to sustain life, and dysentery is the result? Do their assumptions comport with scientific investigations? That hypothesis is fallacious, and has no foundation in fact so far as my observation has extended, for we have occupied a room above the bee cellar for four seasons and cannot subscribe to that theory. By *repeated* trials, I have satisfied myself in regard to degrees of heat generated by a *populous* colony, and give the *figures* for the same. When the temperature of the cellar (three feet from the hive) is 32° inside (not *among the cluster*) a thermometer laid lengthwise on top of the brood-frames registers 78°—a difference of 46°—with hive raised from bottom-board, a bee space, and bur-

lap on hive slightly raised. If the same rule applied to higher outside temperature:

At 35°	outside,	inside	ther.	would	stand	81°
" 40°	"	"	"	"	"	86°
" 45°	"	"	"	"	"	91°
" 48°	"	"	"	"	"	94°
" 52°	"	"	"	"	"	98°

If the degree of heat was maintained in proportion to the scale above, the heat inside would be unendurable; but at 41° outside the bees begin to break cluster, and at 45° the cluster *is broken up* and they manifest a very restless disposition, travelling swiftly to and fro, trying to get out of the hives, and on such occasions the *loudest* roaring is heard. This fact cannot be gainsaid, for inside the experimental hive the thermometer registered but 76°, proving conclusively to me that bees endeavor to keep the temperature at from 76° to 78°, the proper condition for successful wintering. I believe *high temperature* to be the cause of bee diarrhœa, not improper stores, as my weak colonies have never shown symptoms of that disease.

Hives packed full of bees as many of mine are, with the mercury ranging from 45° to 50°, *sweat profusely*, the combs in consequence soon become mouldy, honey therein unfit for use, the entire colony perish, and in the spring when the hives are opened, to our astonishment we find a putrid mass of bees and the cause, jumping at conclusions, is attributed to pollen, honey dew or poor honey.

While it is a fact that our strong colonies cannot be wintered safely in a cellar wherein the temperature rises so high as to cause the trouble indicated, a weak colony will remain perfectly quiet and winter well in an atmosphere deleterious to the majority of large swarms.

As *all* colonies are not uniform in size we must make the conditions alike for large and small ones, which can be done by dividing the larger and contracting the smaller by using division-boards, thereby compelling them to cluster as desired.

I prefer medium-sized colonies, but "men and mice go oft agley," men especially, if, as in my case the elements combined to frustrate all our well-laid plans.

In this article I have been actuated solely by a desire to help solve the vexed problem of wintering bees *under the ground*, and as an "ounce of prevention is worth a pound of cure," so is one practical scientific fact of more value than volumes of theoretical asseverations, I have been careful not to "submit positive assumptions upon the tottering platform of unverified theories."

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TERMS: 75 CTS. PER YEAR.

Wenham, Mass., March 1, 1888.

THE MANAGER'S CORNER.

Perforated Zinc Honey-Boards.— We have watched the argument that has been advanced concerning the use of queen-excluding honey-boards. As yet there is no good practical reason shown why such a device should be used to prevent queens from entering the sections. We do not use them for the following reasons:

First. Where they are used there must be a bee-space below and above the honey-board; this, of course, necessitates two shallow chambers or bee-spaces where there should be but one, yet one such chamber we consider quite necessary. The more such useless room there is for bees to loaf in, the less honey will be stored in the sections. Then, again,

there is a loss of heat, not only from the increased room, but by the increased ventilation given over the combs and through the sections. And, again, where a bee-space is allowed over and under a honey-board the sections are carried much farther from the brood or brood-chamber; this is a bad feature in any hive. It has always been our practice to get the sections as near the brood as possible; thus all the animal heat generated in the hive is economized by the comb builders in the sections. Bees in hives thus arranged do not desert the surplus department at night, a time when all the bees are in the hive and comb building is generally carried on rapidly.

Second. Our strongest objection to using perforated metal honey-boards is the fact that they are a great hindrance and obstruction to the passage of the bees through them to and from the sections. The detention thus caused to a colony during the day amounts to the loss of many pounds of honey. We have found, when such boards were used, that the bees would not enter the sections readily. The colonies that had no such "blockade" placed in their hives were in the sections and at work several days before those were where the excluders were used.

Well, now suppose the queen does go into one or two sections and spoil the looks of them by depositing her eggs in the cells. Do we not gain half a dozen pounds of honey for every one lost in that way where no excluders are used? Will not the bees be likely to do more work in the sections if there is one or two sections filled with brood? In the season of 1886 we used no queen-excluders or honey-boards of any kind on any of our hives and not one section was spoiled by the queen entering them.

For the above reasons we do not think queen-excluding honey-boards are a necessity. We do not use them or any other kind, nor do we believe in them at all; but we are of the opinion that much honey is lost every year where they are used.

[The above was in type before Dr. Tinker's article came to hand, hence is not intended as a reply to the Doctor's most excellent contribution.]

New Strains of Bees.—It is our intention to make many experiments in crossing some of the different races of bees the present season. Several Carniolan queens will be fertilized by Italian drones. A few queens will be reared from that cross and mated to pure Italian drones of a strain not related to the original Italian blood used. We have ten queens in the apiary reared in an apiary in Vermont and from a famous strain of pure Italians; thus we are prepared to rear queens and not in-breed, neither shall we be obliged to send to a distant apiary for queens in order to prevent in-breeding.

We have not one queen in our apiary that was fertilized by a drone of the same colony or strain.

We believe every beekeeper can improve his bees by judicious crossing. Infuse new blood into the apiary each year by purchasing a few queens from a distant apiary. If an apiary contain 100 colonies not less than 25 young queens from a distant apiary should be introduced yearly. It will pay to do it.

The pages devoted to advertisements are pretty well filled with "ads" of dealers in beekeepers' supplies. We need not say one word in commendation of any of the parties who have favored us with their advertisements. They are men well known for honesty and fair dealing.

Our regular subscription list is not as large as that of one, possibly two, other bee papers, yet we can assure our advertisers that the AMERICAN APICULTURIST is read by more beekeepers than any other bee journal. We advertise in about forty different publications to send sample copies of the API, and thousands are called for every month, and it is sample copies that tell for an advertisement.

The AMERICAN APICULTURIST is published in New England, but our circulation is not here; very few copies of the API go to New England beekeepers. Our circulation is largely at the West and the API can be found in nearly every county and in a large number of the towns in the United States.

ARTHUR TODD.

News of the death of Mr. Todd reached us on the 14 inst. We knew that our friend was in poor health but was not informed that his recovery was unexpected. The last we heard from him was in the summer of 1887; he then wrote us that as soon as he was feeling better, the *Foreign Notes* would be continued.

The death of Mr. Todd is a loss to every beekeeper who has been a reader of the bee-papers. Few men had a better knowledge of bee culture than he. By profession, Mr. Todd was a chemist. His confections manufactured from honey gave him much notoriety.

We believe Mr. Todd was a Frenchman by birth, but came to this country from England a few years ago and engaged in bee culture. The only member of his family with him was one son.

Mr. Todd had a thorough education, could speak several languages, and as a contributor of bee literature had few peers.

Like a good many other men, Mr. Todd in some respects was unfortunate and has striven hard for success.

Mr. Todd died on February 11, 1888. We cannot give his exact age, but should say he was not far from fifty years. We extend our sympathy to the members of his family.

The following articles from the pen of Mr. L. Stachelhausen will appear in the API during the year: "Physiology of the honey bee," "How the bees eat pollen," "The food for the larvæ, how prepared," "How bees secrete wax and build combs," "New races and In-breeding;" also from other contributors, sev.

eral interesting articles on "Prevention of Increase," others on "Wintering Bees." In fact we already have about as many leading articles as we can use this year and all are from the best contributors the bee fraternity affords.

The API will be kept up to a high standard and its well-deserved reputation will be maintained. All our contributors are practical men as well as men of brains. We are very proud of the entire corps.

All the colonies in the Bay State Apiary had a flight on Sunday, Feb. 5. Every colony has been on the summer stand all winter, no packing around the hives, yet we never saw, and think it would be hard to find, fifty-three colonies of bees in such fine condition; no dead bees, no mold nor dampness about the hive, and every colony apparently in as fine condition as in September last.

The "Api" will be sent to several thousands of beekeepers whose address has been sent us within six months. We are receiving from twenty to one hundred and twenty-five calls per day for sample copies of the APICULTURIST. Those who advertise with us the present year will reap a rich harvest for such an investment with the "Api."

Please look this issue of our paper over and then send us 75 cents in postage stamps, or in any currency, and get twelve more copies of the API equally as valuable and interesting. Can you afford to be without them?

Club Rates of the different bee-papers with the API, found on another page, will not continue after May 1. The prices are very low and were only made to quicken subscriptions for our paper.

The price of the API, *without premium*, is 75 cents per year. Any one who subscribes at that price can get one of our fine queens by remitting 75 cents more at the time the queen is needed. Price of sample drone-and-queen trap to subscribers, by mail, 40 cents.

Our subscription list is growing rapidly, thanks to the hundreds of friends who are aiding us to increase it.

Do not induce robbing in the apiary by leaving a hive on the summer stand from which the bees have died. When a colony begins robbing in the spring it is pretty apt to keep it up all the season. "An ounce of prevention is better than a pound of cure."

The essays on the "Productions of Comb Honey" by J. E. Crane and Mr. Isham will appear in our April issue.

After February 29, we can mail the drone-and-queen traps to our friends in Canada.

COMBS BUILT CROSSWISE.

Gibson, Pa.

MR. ALLEY: I have three colonies that have built their combs crosswise of the frames. How can I best straighten them and when can it be done to best advantage?

F. C. SCOTT.

[THE best time to operate on a colony of bees whose combs are in the condition described, is late in the spring or, say, just before the bees begin to gather honey. Probably I have purchased one hundred colonies of bees and found the combs in as bad condition as those above described. The bees were purchased of people who had no idea what movable frames were for.

The combs were treated as follows: The bees were driven into the cap of the hive after removing the board that covers the frames, when nearly all of them were driven out, the frames were loosened from the rabbets and the combs detached from the side of the hive if fastened there as they usually are. Then the hive was inverted, combs and all, the frames resting upon two sticks to prevent any bees from being crushed, and the hive gradually lifted from the frames and combs. Every comb is then cut out, the bees brushed from them and each one laid by itself upon a board. One comb of brood should not be placed on another, as the heat thus created by the brood would, in a short time, destroy the immature bees in both combs. I usually press the combs down flat by using a smooth board as large as the piece of comb to be straightened. This process will not damage the brood in the least. We are able to say this from thirty years' practice.

When all the combs are out cut them into the frames with a sharp, thin knife. Do the work so nicely that the comb will just fill the frame without more cutting. Now, tie the combs into the frames by using cotton twine. Don't use sticks, wire or pieces of tin for such a purpose. Those people who use and recommend such devices are behind the times, and their advice should not be followed. Where

cotton twine is used, the brood, coming directly under it, will not be destroyed as it is sure to be when other things are used.

Colonies whose combs have been transferred will usually fasten them at the top quite strong, in the course of an hour after being placed in the hive, at the same time the twine will loosen. Thus you see it will kill no brood.]

HOW LONG CAN A VIRGIN QUEEN BE KEPT IN A QUEEN NURSERY?

Ahnapee, Wis.

I should like to ask the following question: "How long can a virgin queen be kept in nursery before being given to a nucleus, or introduced into a full colony?"

W. SWATZ.

[Probably there is not a queen dealer in the world who makes larger use of the queen-nursery than we do. We have in constant use from June 20 to Sept. 20 not less than ten nurseries, each having twenty-one cages. Of course all these cages do not have queens in them, as some of the cells do not hatch, especially those in the lower cages.

We intend to clear the cages as often as once a week, but often the weather is such sometimes that no queens are fertilized for ten days and then the number of nurseries is increased to fifteen or more; as, when queens are not mating, other queens are growing and a place must be provided for them. From ten to fourteen days is as long as we care to keep queens confined in such cages, though we have had them confined for several weeks at a time. When given a chance to mate they quickly do so and promptly commence to lay inside of forty-eight hours.]

FEEDING BEES.

Boston, Mass.

MR. ALLEY: I wish you would send me full direction how to make the candy to feed bees in the spring. How much sugar and honey, and how large amount to feed each colony?

S. F. F.

[The food used in queen-shipping cages would be first-rate feed for bees, provided some good way to use it could be devised. If it is spread upon paper and then laid upon the frames and under the cushion directly over the bees, we think it would work well.

In the composition of this food we use powdered sugar such as confectioners use for "frosting." About one pound of honey to five pounds of sugar and then well kneaded for an hour. Then use about two pounds per colony each week, from April 1, to the time fruit trees blossom.]

SCRIPTURE TEXTS WHEREIN THE WORD HONEY OR HONEY-COMB IS MENTIONED.

Should it be within the line of admissible matter for insertion in the *Journal* kindly find a corner for the enclosed. It may possibly interest some of your readers to see a record of the numerous passages that appear in Holy Writ where the word 'honey' or 'honey-comb' is mentioned. It might also lead them to a search to supplement those I give, or failing that, might notice the passages given, when they could but find a great deal for thought, if only the references made to honey. The light in which it is placed before us is evidence of its value in ancient times. I have not found a price quoted for honey in my readings, but that merchants traded in honey at fairs and markets is told in Ezekiel, chap. xxvii. Perhaps some of your correspondents can enlighten us as to the earliest money value quotations for honey; it would be very interesting.

Here I would mention I have a pleasurable recollection of a visit to a village school, and offering three prizes, first, second, and third, to the boy or girl who should give me the largest number of texts from Scripture in which the word 'honey' or 'honey-comb' is found, each text to be written out in full, the schoolmaster very kindly undertaking to be the examiner. (The work was, of course, done out of school hours.) There were twelve children who entered the field of search (ten girls and two boys); the highest number, 51, was given by a boy, three girls came close after him with 45, 45, 46, four from 30 to 39, four with from 20 to 25. The work of two of the girls, aged ten, was of great merit. I have thought since how many of these children might probably as they grew up become beekeepers, having had their thoughts thus directed in their childhood. They were very enthusiastic at the time.

Gen. xliii: 11.
Exod. iii: 8, 17; xiii: 5; xvi: 31; xxxiii: 3.
Lev. ii: 11; xx: 24.
Numb. xiii: 27; xiv: 8; xvi: 14.
Deut. vi: 3; viii: 8; xi: 9; xx: 9; xxvi: 15; xxvii: 3; xxxi: 20; xxxii: 13.
Josh. v: 6.
Judg. xiv: 8, 9, 18.
1 Sam. xiv: 25–27; 29; 43.
2 Sam. xviii: 29.

1 Kings, xvi: 3.
2 Kings, xviii: 32.
Job, xx: 17.
Ps. xix: 10; lxxxi: 16; cxix: 103.
Prov. v: 3; xvi: 24; xxiv: 13; xxv: 16, 27.
Sol. iv: 11; v: 1.
Isa. vii: 15, 22.
Jer. xi: 5; xxxii: 22: xli: 8.
Ezek. iii: 3; xvi: 13, 19; xx: 6, 15; xxvii: 17.
Matt. iii: 4.
Mark, i: 6.
Luke, xxiv: 42.
Rev. x: 9; x: 10.

The above gives a total of fifty-nine texts. Will some of your readers supply any additional ones? I remember Mr. Carr on one occasion when giving an address quoting a number, but I forget his figures just now.—R. R. GODFREY in *British Bee Journal.*

Don't fail to read the supplement sent with this number.

GLEANINGS FROM CORRESPONDENCE.

HE LIKES THE TRAPS.

Little Genesee, N. Y.

MR. ALLEY: Several years ago I bought some of your drone-and-queen traps and have used them with satisfaction. I want one hundred more for my own use. I have been a subscriber to API from the first number.

Bees have not had a good flight since November 26, 1888. They are now quiet. M. L. SPENCER.

THINKS IT IS SPLENDID.

Stoughton, Wis.

Mr. ALLEY: Find enclosed amount for renewal of API for 1888. I think your journal is splendid and I cannot afford to do without it.

T. H. DOBE.

Dutton Sta., Mich.

Mr. H. ALLEY: Please accept my best wishes for yourself and bee journal. I take three bee-papers and and in my opinion yours stands at the head by long odds.

E. ANNIS.

A LIVELY, SPICY PAPER.

Wethersfield, Conn.

MR. ALLEY: You have succeeded in making the API a lively, spicy and valuable journal for the beekeeper.

I. W. SAGE & SON.

GOOD ENOUGH WITHOUT PREMIUM.

Muscatine, Iowa.

Mr. HENRY ALLEY: Enclosed find $1 in payment of subscription to "API". I want no premium: the API is worth the money.

F. REPPERT.

MOST KNOWLEDGE IN SMALLEST SPACE.

Dadeville, Mo.

MR. ALLEY: I find much comfort in reading the API. Your plan of questions answered by practical beemen cannot be surpassed. Among the sample bee papers sent me, I selected the API as it gives the most knowledge in the smallest space and is excelled by none.

R. D. McMURRAY.

BRIMFUL OF INFORMATION.

Oran, N. Y.

H. ALLEY: The API and drone-and-queen trap at hand. As the *American Bee Journal* rightly says, "the API is brimful of information."

The essays are worth five times the price of the API one year.

WM. H. BALCH.

Sample Copies of the API will be sent free to any address. If the reader of this can place half a dozen copies of our Journal in the hands of beekeepers where they will be of some benefit to us we will cheerfully mail them. We know of no better method to aid the publisher.

EXPIRATION OF SUBSCRIPTIONS.

When your subscription expires a cross, thus, ×, will be made over this notice. The same is intended as a kind invitation for you to renew your subscription at once. If you need the journal and cannot spare the money we will continue it, if requested to do so.

SUPPLEMENT

TO THE

AMERICAN APICULTURIST.

WENHAM, MASS., MARCH 1, 1888.

For the American Apiculturist.

THE BAY STATE HIVE.

REV. D. D. MARSH.

LIVING near Wenham, I find it hard to get through the winter without making a visit to the bushy-whiskered and genial queen raiser who fathers all the rest of them. It being very sunny and moderate on January 31, I rode into his yard and began to look around. Found Mr. Alley in his office where the editing of the APICULTURIST is done, besides a great variety of other kinds of work.

The readers of that fine bee journal need not fear for their future feeding, for I saw a pile of good articles gathered ahead, which I should think would last all summer. And now I wish to speak a secret which I hope no correspondent will be sensitive about. The first thing I read when my APICULTURIST comes is the "Editorial Notes," written by friend Alley, who is too modest to print himself as editor, but only as "manager" of the journal, but who sets an example to all how to edit a bee-paper. I was shown traps in process of manufacture, and parts of the "Bay State Hive" just as they are sent out to customers, all of which were of good material. The first thing I wanted to see was the bees in their master's "new hive," and find out what kind of a recommendation the bees would give the hive after such a stinging cold winter as this. So out we went into the yard, where over fifty new "Bay State" hives, painted white, met our eyes. Mr. Alley practises what he says the hive will do, with a good bee repository in his yard. He winters all his bees out-doors in his double-wall hives, and I am glad to see that he has the same idea that I have always had about setting hives on the ground: every one of his hives was set up a foot or more from the ground. Just as though the bees were ground insect, and we should put them down in the mud, and water, and dampness of the soil, when the Creator taught them to seek their home up in the dry air of tree-tops! We opened one of the hives, lifting the top-cushion, and the bees boiled up in a most healthy and abundant way. This was a sample hive, and the combs looked fresh and dry, and the bees seemed to say to me, "The Bay State is the hive to winter in." Now this leads me to the point of my article I had in mind.

The object of my visit was to get some hives, as well as to see friend Alley's bees wintering in the same. I have used a common double-wall L. hive for eight years and think for our Massachusetts climate such a hive an excellent one. I have been studying the new invertible hives to decide which was the one for me to adopt. And now, after witnessing the working of the "Bay State" for two seasons, I wish to tell the readers of the APICULTURIST some of its excellences and why I think it

the best invertible hive. Any beginner just starting out in the fascinating pursuit of beekeeping, could not do better than adopt this hive which sums up all the latest desirable improvements. It has the Langstroth frame, is a double-wall hive, and it is invertible. Among its features which to me seem valuable, I would mention the following: 1. The outer *case* is light, being made on the sides of half-inch boards, and on the ends of seven-eighths stock. It is not like a great cumbersome chaff-hive, nor like a heavy box; but it is neat, and graceful looking, weighing all complete only thirty-six pounds.

2. The *roof* slopes to the right and to the left like a house roof, and has a saddle-board covering the joint where the two slopes come together, making a leak impossible, besides giving it a very trim and graceful look.

3. The *bottom-board* is a good solid stand and board combined, so made that it cannot warp, with a half-inch space under the frames, and on a lighted portico in front with narrowing walk-way into the hive. A queen-trap just fills the entrance, and in winter all you have to do is to lay a six-inch board across the portico, and you have under the board a darkened entrance into the hive which neither sun, nor rain, nor snow can enter. Besides, just within the entrance, the bottom-board has a half-inch-sloping rise, so that no water can run into the hive, even though it stood on a level.

4. The *brood-box* is composed of eight closed-end frames, with half-inch-thick side-boards on the outer sides of the whole, the whole clamped together by two iron rods with thumb screws. As it stands, the ends of the frames make the ends of the box; it is just alike top and bottom, and can be turned either side up at will, for the top-bar and bottom-bar of the frames are of the same width, and both are just a bee-space inside of the tops of the frame ends.

5. The *frame* is a closed end frame, and this I consider the chief excellence of the hive. In our climate box honey comes largely from white clover, and the swarm that breeds up in season for apple-bloom and clover-bloom is the one that piles in the honey. The value of a hive depends almost wholly on its favoring early breeding in the spring.

Now an open-end frame permits cold air to play around the cluster, and not until they get strong can they fill the brood box with heat. This retards brood-rearing in early spring. But with a closed-end frame, each space between two combs is a little tight, cosey, brood-nest which holds the heat. Even though there are bees enough to fill only one space they will build up rapidly. This hive has the crowning quality that it favors the building up of the colony in early spring.

6. The *cushion* filled with chaff which goes on top the brood-box is made large enough to fill the outer case entirely. This makes an air-tight space below the cushion between the brood-box and outer case, which is just as good protection as packing the space with chaff. Here is a point which I think is important, doing away with cumbersome chaff-hives which are heavy to lift, hold dampness, and do not let the heat of the sunshine through in early spring.

7. The *super*, or section case, is just simplicity itself, like the brood-box exactly alike on top and bottom. It is made of six wide frames each holding four pound-sections, with side-boards on the outer sides of all, and all clamped together by a rod running through the centre in a hole bored

for the purpose. Wood separators go between each pair of frames. The top-bar and bottom-bar of the wide frames protect the tops and bottoms of the sections and they come out unsoiled. This I regard the only way to produce clean and attractive sections of honey. The super when clamped seems like a box with slits in top and bottom, and a neat honey-board covers its top.

8. This hive needs no *division-board*, though one can be inserted between any of the frames. By taking out some of the frames, and clamping the rest together, you have what is better than a large brood-box parted off,—you have a little, tiny hive as tight and warm as a vest pocket. In fact, every frame in the hive is a division-board; for any space between two combs is a little brood-chamber in itself, where early bees can hatch for the early flowers. These are some of the reasons why I like the "Bay State" hive and realizing the importance of starting aright, I can advise any new beginner that he will go wisely adopting this hive. The parts of the hives in the flat are sawed out of the best lumber and cut very neatly.

Georgetown, Mass.

CLIPPING QUEENS' WINGS.

We have no doubt that clipping the wings of the queens which Mr. Lindemuth speaks about on page thirty-six, had much to do with the supersedure of the missing queen. Some twenty-five years ago we clipped the wings of a queen and that is the only one we ever treated in that way. We do not believe in it, nor do we think any man can care for a large apiary as easily when the queens are clipped as it can be done where the wings of queens are not meddled with. It strikes us that in an apiary of a hundred, or even fifty colonies of bees it would be considerable trouble to hunt up at swarming time the queens of from three to ten swarms that are very liable to issue at the same time. We never did like so much trouble.

If it is not "tooting" our own horn too much we will say that a good drone-and-queen trap is far better than the clipping of queens' wings. When we have traps on the hives, we do not care if every colony in the yard swarms at the same time. When we get ready and it is convenient, we look after the swarms, feeling satisfied that not one (even though a thousand swarms issued at the same time) can abscond, and we also are certain that the queen of each swarm is in the trap. She can be released at the will of the apiarist. Now, in cases where the queens' wings are clipped, the swarms must be attended to immediately or some of the queens will be lost in the grass, or in some other way. We know that it is hard to convince some beekeepers that the queen-trap is not a humbug, or is useless. Nevertheless, thousands of beekeepers have them in use, and thousands of the traps are being sold every year. There are reasons we might give why some prominent beekeepers have not adopted and used this mechanical device for controlling swarms when they issue. Petty jealousy seems to be a predominating characteristic of some people. Some smart beekeepers would not use the movable-comb hive for a long time after it was invented by Mr. Langstroth; other people did not believe in comb-foundation; others said the Italian bee was a humbug, etc., etc. Nevertheless, all the above-mentioned articles have become staples in the apiary,

and the drone-and-queen trap is rapidly growing in favor; and in a few years, wherever you find an intelligent beekeeper you will find him equipped with all modern fixtures of the apiary.

So far as we are concerned, we are content to let the old fossils of beedom clip the wings of queens, climb into tall trees, pound on tin pans and blow horns in order to hive a swarm of bees.

Let the old fogies who blow against bee-papers, movable frames, and the like, enjoy the old worn-out methods of beekeeping to their heart's content. Enlightened beekeepers all over the land are adopting new methods and new fixtures promptly, and they are the men who are making beekeeping a success.

Salado, Texas.

MR. H. ALLEY:

October API at hand. Thanks. Have not been able to write much for the API, as I am alone and have so much to do. I have fifty chickens, thirty head of cattle and a horse to feed, all my housework to do, beside the estate of my deceased husband to settle.

I am quite large and fleshy (as I believe most beekeepers are) weigh 225 pounds. The past exceedingly hot and dry summer so debilitated me, that I had but little energy to do anything more than I was just obliged to do, hence you will see the reason why I have not written much for the API.

I have two queens that I got of you and must say that they are the finest in my apiary. Wishing you success,

I am yours, respectfully,

S. E. S.

NOTICE.

Notwithstanding the fact that the prices of nearly all kinds of metals are advancing, we will make a discount of 13 per cent on all orders for drone-and-queen traps received before April 1, 1888.

With each half dozen or dozen traps we send one made up, making 7 traps in one case and 13 traps in the other.

Regular price of traps is $3.50 per dozen or $2.00 per half dozen.

1859 — QUEENS! — 1888

Bay State Queen-Rearing Apiary.

If the reader is in want of the best **strain of pure Italian Bees**, he should not fail to order one or more queens from the **Bay State Queen-Rearing Apiary.**

All our bees are wintering on the summer stands, and notwithstanding the fact that the temperature has been for several days from 12° to 20° below zero, there are not half a dozen dead bees to be found on the bottom-board of any of the hives.

This particular strain of bees is the result of long and careful breeding, that has required many years to develop and perfect. A more hardy, energetic strain of Italians, combining, as they do, the desirable qualities of good honey-gatherers and mild disposition, purity and beautiful marking, would be hard to find.

OUR PRICES.

Warranted queens, each,.....$1.00
Selected (which means the best we can select from 250 nuclei.).....1.25
Tested (queens not sent out until after brood has hatched), ... 1.50
Selected tested (the best we have), . . . 3.00

10 per cent discount on orders for half a dozen or more. PURITY AND SAFE ARRIVAL GUARANTEED IN ALL CASES. Address,

AMERICAN APICULTURIST,
WENHAM, MASS.

BEEKEEPERS, READ THIS!

We will send you the AMERICAN APICULTURIST, one year, without premium for $0.75
Apiculturist and AMERICAN WEEKLY BEE JOURNAL, ... 1.60
Apiculturist and GLEANINGS (semi monthly, ... 1.60
Apiculturist and BEEKEEPERS' REVIEW (monthly), ... 1.00
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Apiculturist and one of the finest selected Italian queens reared in our extensive queen-rearing apiaries, . . 1.50
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The above is the most liberal offer yet made by any one for the above papers. Address,

AMERICAN APICULTURIST,
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ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

Published Monthly. HENRY ALLEY, MANAGER.

VOL. VI. WENHAM, MASS., APRIL 1, 1888. No. 4.

We deal in first-class apiarian supplies of all kinds, lowest prices. Prompt shipment.

Established in 1883. Terms: 75 cents per year, 50 cents per six months, 25 cents per three months. Cash in advance.

Any yearly subscriber is entitled to one of our selected queens anytime between June 1 and Oct. 1, by remitting 75 cts.

Address all communications, AMERICAN APICULTURIST, Wenham, Mass.

For the American Apiculturist.

THE PRODUCTION OF COMB HONEY.

J. E. CRANE.

LOCATION OF THE APIARY — RACES OF BEES — SECTION CLAMPS AND SEPARATORS — FASTENING FOUNDATION IN SECTIONS — WINTERING BEES — SPREADING BROOD — WHEN TO PUT SECTIONS ON — SWARMING TIME — CONTRACTION — REMOVING SECTIONS — FUMIGATING HONEY WITH SULPHUR — CLEANING SECTIONS, ETC., ETC.

It will be impossible to discuss in detail everything connected with the production of comb honey on a few pages of the APICULTURIST. Circumstances are constantly varying. What may be best in one place and season may not be in another.

Much will depend on location. If one may choose, in our northern states, a section where clover and basswood are abundant should be selected; and if you can add to these plenty of raspberries, it will prove more satisfactory.

When you can unite with these sources an abundance of buckwheat, the conditions for large yields of honey are still more favorable.

If possible, avoid setting hives in a low, damp, cold or windy place. The winds of early spring will decimate the flying bees, while cold and frosty nights will chill large quantities of eggs and young larva, and thus keep colonies weak till late in season.

One of my yards that suits me best is in a tall grove of deciduous trees in an elevated position, almost wholly sheltered from wind, and entirely protected from early or late frosts. The sun shines warm and pleasant from May till the latter part of October, while almost every hive is in the shade during the warm months.

WHAT RACE OF BEES SHALL WE KEEP?

If the location is north and principal sources of honey are clover and basswood, I believe there is nothing better than Italians. Should a large share of the surplus be from buckwheat or other dark honey-producing flowers, the German or black bees are to be preferred. Why black bees will gather more dark and less light colored honey than Italians, other conditions being the same, I cannot tell, but know it to be a fact.

Whatever race is chosen, let us breed only from the queens of the most productive colonies. I have observed a much greater difference between individual colonies

of the same race than between the average of different races. An intelligent apiarist in my employ estimated one queen in the yard he worked, to be worth $100 just to rear queens from for our own use, in producing comb honey.

This queen was sufficiently prolific, while her progeny were gentle and better honey gatherers and comb builders than any other bees in a yard of one hundred and thirty-five colonies, and have maintained these traits for three successive years.

It is well to be on the lookout for such queens and when found to rear our queens from them so far as can be done.

We must have a movable-frame hive, not more than nine or ten inches deep. If the honey season is long, a large brood-chamber may be best; but, if the season is short, a brood-chamber of very moderate dimensions is a necessity if we would secure much surplus comb honey. I use the Langstroth frame, from seven to eleven in each hive.

SECTION CLAMPS AND SEPARATORS.

For a clamp for holding sections, I prefer one of my own invention and not in general use. It holds twenty-four one-pound sections, but can be made larger if desired. It is very convenient, and keeps the sections cleaner than any other I have seen. Separators are essential, if fancy white combs of even weight and thickness are to be secured. There is nothing so cheap or desirable as those made of soft pine. A clamp of this size is as large as even a large colony will occupy early in the season and when more room is wanted it is better to raise up and insert another clamp under the first. To secure snowy combs, it is necessary that the comb should be built, filled, finished and removed quickly.

Sections made of white poplar are best, and I prefer the size $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$ inches.

In some markets a section $3\frac{7}{8} \times 4\frac{7}{8} \times 1\frac{1}{2}$ inches would suit better. Sections should be made and filled with nice clean starters or light foundation before warm weather begins. If filled with worker foundation there will be no danger of drone-brood being started in them, which is often an important consideration.

FASTENING FOUNDATION IN SECTIONS.

In fastening in foundation, I prefer to use beeswax one part, and paraffine three parts, melted together and with a teaspoon running a little along the edge of the foundation, and fastening it to the top of section. This mixture works much better than clear beeswax, and it takes much less of it, and seems to me is a much better way than mashing the foundations against the section. An active man can, with melted wax, put in 1500 starters in a day, and pack the sections in clamps ready for the hives, and if well done they will stand almost any amount of shaking or jolting without breaking loose, which is important where the sections are to be taken some miles over rough roads for use.

WINTERING BEES.

Much of one's success will depend on how bees are wintered. If well wintered, it is usually an easy matter to get them strong by clover time.

I have wintered my bees most extensively out-of-doors in double-walled hives.

All that is essential is a good colony of bees, twenty to twenty-five pounds of good honey or sugar syrup, and the brood-nest made small by the use of division-boards and thoroughly packed on all sides, top and bottom also, with wool, chaff, sawdust, leaves or fine shav-

ings. I have used all these with entire success. The entrance should be kept free from ice or dead bees. If a large sack is made of cheap cotton and filled with planer shavings for the top covering, it can be easily removed for the examination of bees or to pack away for summer. The rest of the packing can remain on the hives during summer without harm. The hive that I formerly made for this purpose, with an under entrance, that has been patterned after so extensively, I have discarded, preferring to have the bees enter from the front, and experience proves that bees winter much better in such hives than those with an *under* entrance. Yet after more than twenty years' experience with hundreds of colonies, I am persuaded that for the colder sections of our country, in-door wintering is to be preferred where one can command a cellar, or other place where the atmosphere can be maintained at a proper temperature, from early November until late in April.

The temperature that suits me best is from 50° to 55° the early part of the winter, and 5° to 10° cooler the latter part of the season of confinement.

The temperature should be as high as possible, and the bees remain quiet, which will doubtless vary with other conditions.

I have found that when the honey-board is raised one-eighth inch at one end bees remain much more quiet at a given temperature, and the combs cleaner than when no upward ventilation is given.

SPREADING BROOD.

Much has been said and written about building up bees during early spring by changing combs; putting combs of brood from the centre of brood-nest to the outside, and putting empty combs, or those having eggs or larva in the centre; but this practice is almost sure to fail of its object in the hands of a novice, and an experienced apiarist ought to have little use for it unless for a few weaklings.

A much better way, to my mind, is to reduce the brood-nest to what combs each colony can cover in early spring, say May 1st, and then increase the size of the brood-nest as required. Then if the colony is of fair size, with sufficient stores, and fairly enterprising, it will be strong by clover time. A little feed between applebloom and clover if a colony is short of stores, is very helpful in pushing forward a large amount of brood. Nearly all drone comb should be removed from the brood-nest that workers may be reared instead of a horde of hungry drones.

As clover comes into bloom most hives should be full of bees and brood with but little honey or empty combs.

If any weaklings remain, take two, or more if necessary, and unite the brood-combs, getting as many as possible in the above described condition.

WHEN TO PUT SECTIONS ON.

As soon as honey comes in freely put one clamp of sections on each hive, cover it with enamelled cloth, laying the honey-board over that.

If honey is abundant most colonies will enter sections and begin work at once. Still, we often find some colonies strong enough, yet refusing to do anything in our surplus department. Whether the workers in such hives are trying to emulate the easy life of the drones, or are discussing the propriety of emigrating, I do not know. Usually exchanging their clamp, for one partly filled, will set them at work. Queens of such hives had better be changed at once.

SWARMING TIME.

About this time the heart of

the beemaster is happy. The beautiful snow-white combs, in perhaps hundreds of hives, are daily increasing in size, while the purest nectar is sparkling from each tiny cell; when to his utter disgust the work lags in many hives, and eggs and larva are found in queen cells. Soon a harsh, heavy sound announces that swarming has begun; hive after hive is left nearly empty of workers and work in sections is entirely neglected, while the honey harvest is swiftly passing away. What is to be done? If we multiply colonies it is at the expense of surplus honey unless the season is longer than most of us enjoy. Mr. Heddon of Michigan gives a method by which he claims nearly all mature bees are secured with the new colony, and surplus storing but slightly interfered with, while the old colony never casts a second swarm.

I have tried this method very carefully the past season with Italian bees and found about every other colony would cast a second swarm. I think it might work with black bees, as the swarming impulse does not seem to be nearly as strong with them as with the Italian race. I have prevented black bees from swarming by simply cutting out queen cells; and again, after casting a swarm, by cutting out all queen cells, moving the hive to a new place and running the swarm into the hive; they would work on industriously until the close of the season, finishing off their surplus boxes to my entire satisfaction, but Italian bees are not made up that way.

After many years of experience, and after making a great many experiments with hundreds of colonies in several yards, the way that suits me best is as follows: See that every queen's wing is clipped before the swarming season begins. When a swarm issues, pick up the queen; and, if you wish to save her, cage her with a few workers, or otherwise destroy her. Open the hive from which the swarm came and cut out every queen cell; this can be done without smoke. By this time, the swarm will be ready to return or cluster in some place when it can be returned. Again in eight or nine days open the hive and again remove every queen cell, and at the end of another week give a virgin queen. Black bees will accept a laying queen while Italians as a rule will destroy one under the same circumstances, but they will usually accept of a virgin queen. If a queen cell nearly mature is given they are quite apt to swarm after she hatches, but if the virgin queen is given as above directed, I do not remember to have had such a hive, out of many hundred so treated, attempt to swarm. Again the same season, I frequently run these queens into the hive without smoke or other ceremony, and some years not three per cent will get lost. In other years, perhaps ten per cent may be lost or destroyed, so that a few new colonies should be made early in the season to make up any deficiency likely to occur. When the season is quite long more increase is admissible, using early swarms for this purpose. Where the swarms are used for increasing the number of colonies, the hives casting these swarms should have their queen cells removed and virgin queens given the same as where the swarm is returned to prevent second swarms.

The advantages of this system of management are, briefly, that it effectually prevents increase of colonies beyond the desire of the honey producer; it leaves only a small amount of brood to be nursed during the greatest yield of honey; it prevents the maturing

of a large amount of brood too late to be of use in storing surplus, while too early to be of much value for wintering; gives nearly all our colonies young, vigorous queens from our most productive colonies; and, so far as my experience goes, much less work than where swarming is allowed to proceed without any check; and best of all, it keeps every hive supplied with a large force of workers from the beginning to the close of the honey harvest, and work in surplus department goes on almost without interruption from beginning to the end of the season.

CONTRACTIONS.

Some beekeepers practise putting new swarms in very small brood-chambers to force the bees into the sections, as for instance, one section of the Heddon hive or Langstroth hive with four or more frames, filling the rest of the brood-nest with dummies or division-boards. I think it best to use seven or eight Langstroth frames, putting one and one-half good swarms into each hive, thus making all new colonies strong enough to enter sections very soon after being hived. It will be observed that the object of all this system is to keep the largest number of strong colonies at work in the sections from the beginning to the end of the season.

Some writers recommend that new swarms should be hived upon empty frames without comb or foundation, while the sections are to be put on at once with good starters, or light foundation in them, thus encouraging the bees to begin in sections first. My experience has been that when so treated more or less pollen is sure to be stored in the sections, and the appearance injured and the attacks of the wax moth invited to the destruction of the combs, so I advise that the frames for brood-chambers be filled with clean comb or foundation.

To return to our sections: as the first clamp of sections become nearly filled, or the bees much crowded, let it be raised up, and another placed under it, being careful that the bee-spaces correspond, that the bees may pass freely to the upper clamp, and so continue as needed until the close of the season.

REMOVING SECTIONS.

As soon as all the sections in a clamp are filled and finished, let it be removed, as the longer it remains on the hive the more the bees will stain and discolor the combs. Some writers recommend taking off each section as soon as finished. This may be a very nice way, but not practicable in a large apiary, as it seems to me.

Near the close of the season the number of sections on each hive should be reduced to the capacity of each hive to finish as far as possible.

In removing sections, lift the cloth on top and blow hard-wood smoke down between the sections, driving most of the bees before it into the brood-chamber, and remove the clamp or clamps at once. If bees are inclined to rob, place the clamps in a tight box,covering the top with a cheap cotton cloth.

The bees remaining in the clamp will crawl up on the cloth and can be quickly removed.

When clamps are well filled, an active man can remove and get the bees out of 2000 sections a day, and carry them into the house. I prefer to store surplus honey in a dry, warm room, giving the air a chance to circulate around and through each clamp.

FUMIGATING HONEY WITH SULPHUR.

Much has been said and written of the necessity of using sulphur

smoke to keep the larva of the wax moth from injuring the comb; but if the combs are white and clean with no dead flies, or no pollen that the worms can get at, the latter will do much less harm than the sulphur smoke, which is sure to ruin the flavor of the honey, and if too much is used the appearance of the combs, also.

The facts are these worms cannot develop on wax and honey any more than a child can on sugar and starch. They must have some nitrogenous food which they can find in old combs, dead bees, pollen, or even a dead fly.

CLEANING SECTIONS.

Before sending to market every section should be made clean and tidy and carefully graded, and each grade packed in small cases by itself, either with or without glass, with wood sides or in paper-boxes as your market may demand.

The marks on the case should accurately represent the grade.

I have now mentioned very briefly the most important factors in the production of comb honey with but one exception. After all that man can do much will depend on the season.

Some years the yield will be abundant, while in others very small, and it is always well to follow the advice of the late Moses Quinby, and lay in a stock of patience and courage in the good year to carry you through seasons of adversity.

Middlebury, Vt.

For the American Apiculturist.

WINTERING BEES.

SAMUEL RAU.

In the northern part of the bee-keeping world the "Winter Problem" is still an important subject of thought and experiment. It is true many have entertained the idea they had solved the problem to a certainty, but like Hamlet's ghost it would not stay down. Many have been storm-beaten and tempest-tossed on the stormy ocean of sad experience many weary years, and others are still floundering in the sea of endless ideas and theories endeavoring to reach a sure anchorage in the haven of safety. We have all stood on the overhanging rock, like the Mosaic lawgiver of old, and viewed the promised land afar off; but, unlike Moses, many of us have entered into the promised land at last, and that to stay I think.

The practice of the best apiarists of the present day is divided between cellar and out-door wintering, with an increasing tendency toward the former practice among those largely engaged in honey production north of Mason and Dixon's line. Where the proper temperature can be maintained in a cellar during all the fluctuations of our changeable climate, it would seem to be the safest and most desirable mode of wintering.

My experience, however, has been mostly in out-door wintering and it is of that I wish to write more particularly. Wintering bees on the summer stand, at the present day, in single-walled hives is akin to wintering stock without shelter, as many farmers really do, on the south side of a straw stack. If they "rough it" through, it is at the expense of feed and it is a wasteful, slip-shod practice at best. I remember of doing some work for a farmer beekeeper some eight or nine years ago, who had one sad and lonely colony of bees,

> Like the last rose of summer,
> Left standing alone;
> All its lovely companions,
> Having faded and gone.

It was in an old box-hive of

course, with some of the worst cracks daubed over with clay. It stood in a deserted nook in the rear of the house. Within, a few resolute bees still seemed to "hold the fort, but it was up-hill work with them and business did not seem to boom very much even in the merry sunshine of that bright and sunny May day when it attracted my attention. Every now and then a solitary bee, with dejected looks, would sally forth to forage on the abundant flora all around, but it was slow and discouraging work and "bees did not do well" for that beekeeper that season, and his stock of surplus was very limited that particular year. That storm-pelted old beehive with its poverty-stricken inmates seemed to speak volumes to me against wintering bees out-of-doors without packing.

A chaff-hive makes a very good hive to winter in, especially for farmers who are apt to neglect their bees in the fall when work is very urgent in other directions. It is also desirable in early spring-time when brood-rearing is going on and is sometimes seriously interfered with by very sudden and decided depressions in temperature. But there are some serious objections to chaff-hives, among which are their expensiveness and the fact that the chaff-packing often becomes moldy and damp and is then worse than useless. Another objection is their clumsiness, requiring several persons to move them.

After considerable experience with various styles of hives, during more than twenty-five years of apiarian experience, I prefer a one-and-a-half story single-walled hive. It makes a cheap hive, easily handled, and is equally suitable for cellar or outdoor wintering. When left on the summer stand, I use an outside case about four inches larger every way, packing the intervening space with dry forest leaves, leaving an opening for the bees to fly out at will. This outer case can be made of cheap lumber and need not be more than an inch higher than the hive with the roof to shed the water. I use a ten-frame hive; but, in wintering, remove from two to four of the outside frames, according to strength of colony, and put chaff divisions in their places—with a Hill's device and a chaff cushion on top of the frames—then if the colonies have enough of the right kind of stores and are otherwise in a proper condition, I expect to winter safely unless some very extraordinary freak in our weather arrangement occurs.

I leave the packing on until settled warm weather has come to stay, or about the time I am getting things into readiness for surplus arrangements. I find the packing especially useful in spring while brood-rearing is being rapidly pushed. With good packing at this season of the year there need not be much fear of spring dwindling.

Columbiana, Ohio.

For the American Apiculturist.

METHOD FOR GIVING BEES A FLIGHT IN WINTER.

Mrs. H. Hills.

I have felt it my duty to give the readers of the Api a long rest; but now that spring is just upon us, and more particularly, because I have just found out something in regard to beekeeping, which gives me more pleasure than I can well express, the old "jangle" must again begin.

One of my colonies left on summer stands has been uneasy all winter,—bees flying out every possible opportunity, when all others

were quiet. Saw no bees out, except from this hive, from Nov. 15 to Feb. 17; at which latter date, all had a good flight, and all in fine condition.

On Feb. 13, so many bees came out from the uneasy colony, that I set my wits to work to give them a flight. I have a long, low, narrow, summer-kitchen, with only one window, which is at one end of the room, there being a cook-stove at the other end. I first nailed white cotton-cloth closely and firmly, all over the window. Then, with cotton cloth, partitioned off a room three feet wide enclosing the window. Arranged the cloth so that I could raise or lower it, like curtains, to regulate the heat. Brought in the hive, and placed it on a box, close to the window. Took the lower half or so, of an old, white cloth curtain, still containing its strip of wood in the hem, and sewed it across the cloth which was nailed over the window, letting the hem, containing the strip of wood, rest directly on the top of the hive, from which I had already removed the cover; then turned up the blankets sufficiently to form an entrance. Then, warmed up the room slowly, and the bees had a perfect flight. When they began to think of getting back to the hive, I opened an outside door slightly, and they quickly set up a call, and after a little, all were safely and comfortably back in the hive. I picked up, perhaps a dozen, from the floor, and helped them in. They left scarcely a spot on the white cloth. Cooled off the room slowly, and finally took the hive into the vegetable cellar, where we go often during the day. They have since been absolutely quiet.

Why have they been so restless all winter, when so free from disease? The colony is quite heavy; but, certainly, not too much so, nor so heavy as some others.

Now I have my hospital established, and feel no more terror of bees dying for want of a flight.

We have had three cold waves, when the glass indicated 32° below. Nothing like it here, before this winter, in my experience.

Bees in the cellar were never in finer condition.

Sheboygan Falls, Wis.

For the American Apiculturist.

NEW RACE AND IN-BREEDING.

L. STACHELHAUSEN.

How to get a new race of bees superior to any of the present races, has for many years been an important question, but everything coming before the public on this matter is more or less conjecture and no real fact. If we wish to breed a new race, some important questions will arise at once:

1. Can the queen and drones transmit the good and bad characteristics to their progeny?

2. Will every daughter-queen have the same characteristics or only some of them?

3. If only a few queens of the progeny show the favored characteristics, can the same by repeated selection be made constant or fixed, and how many generations will it take to get this result?

4. Which characteristics are transmitted by the drone, and which by the queen?

5. What influence has in-and-in breeding, and in how many generations will appear the expected evil?

Many other questions could be asked, but I think the foregoing are the most important, and every practical beekeeper will know that it is difficult enough to answer these questions, not by theory but by

facts. Theory will help us but little in this respect, because what is true with other animals is not necessarily true with bees. We need facts proved by experiments, and I am glad to be able to give such facts to the American beekeeper.

Wilhelm Vogel, a prominent beekeeper in Germany, and present editor of the "Bienen-Zeitung" (the oldest bee paper in the world), received in 1864 an Egyptian colony of bees. This race of bees is worthless at least for practical beekeeping, but for scientific experiments it is especially adapted.

The color of these bees is very different from the color of the black bees. They are the crossest bees in the world. The queen is remarkably less prolific than the German queens. The Egyptian bee is of smaller size than the German bee.

When Mr. Vogel received this colony he mated at once Egyptian queens to German drones. The worker bees of this generation were a little larger than the Egyptian, the color of the band was not wax-yellow but red-yellow. The drones were not different from the Egyptian, and so the Dzierzoń theory was again verified. The young queens were red-yellow and not wax-yellow like the Egyptians. These queens were mated again to German drones. When the young bees of this second generation emerged from the cells, something unexpected was to be seen. The worker-bees were of three different kinds. Some of them were quite like the Italian bees, some exactly like the Cyprian bees and some were smaller, and the size of the Egyptian, but quite black with gray-white hairs.

When the young bees commenced to work in the field, the characteristics of the different races were observable. In opening the hive those small black bees covered at once hand, face and clothes, and stung plentifully. No care and no smoke could subdue them. In handling the frames the Cyprian-like bees commenced to sting. The bees like the Italian were prominently gentle. So on the one side the worst disposition was observable, and on the other side gentleness, no mixing of color or characteristics. This is one important fact in breeding a new race.

Further, this experiment and later observations of Mr. Vogel make it very probable that the Cyprian and Italian bees are crosser than the black German and Egyptian bee. The geographical situation of these countries make this more probable.

The drones and queens of this colony showed the same three different kinds, and Vogel tried now to rear from these hybrids a constant or fixed race. Of course he selected the gentle bees for this purpose.

As soon as a young queen emerged from the cell, eighty to one hundred selected drones were introduced to this small colony, and the hive carried to a dark cellar for a whole week. On a warm afternoon when the drones of every other hive had ceased flying, the fertilizing hive was carried into the yard, and some warm honey poured into it through the alighting hole or elsewhere, and at once the worker-bees started out, then the drones and at last the queen. At evening the hive was put back in the cellar and taken out each day, until the queen was fertilized. In this way, sometimes it takes days and weeks to get the queen mated, but the plan is quite sure and we have no better one. This plan to get queens fertilized by selected drones is known in Germany as Koehler's plan, and was invented about 1867, but known and published before by others.

For scientific experiments, when time and labor are of secondary importance the plan is just right, but for practical use to raise queens and then to sell them, it is too complicated and too slow.

From the brood of this so-fertilized queen, Mr. Vogel reared some daughters, selected again and proceeded in the same way. In every generation the desired characteristics were fixed more and more, and during twelve generations the new race was constant in color and characteristics. This race was like the Italians, but the white hairs are still kept in the apiary of Mr. Vogel in forty colonies.

So we see it is necessary to select queens and drones for a number of generations to get a new and fixed race. After this less care in selecting is necessary. This is a second important fact for breeding a new race; if we only cross, and then stop selecting, the wished-for characteristics will disappear after a while.

In the same way were Italian queens mated to Egyptian drones, and when so bred the bees showed all the crossness of the Egyptian bees. Egyptian queens mated to Italian drones produced worker-bees as gentle as Italians. So it is proved that these characteristics are transmitted by the drones. The same experiment proved that prolificness is transmitted by the queen. This is another important fact.

Another experiment was made to see the effect of in-and-in breeding. The Egyptian queens make it possible to do this in shorter time than by another race, because they lay drone-eggs in the first year, and in a strong colony two or three weeks after fertilization.

A young queen was mated to a drone of the same mother. As soon as this queen had brood, from this brood some young queens were at once reared, and mated to drones of the second mother. So generation after generation was reared by *incest*-breeding.

By this incest-breeding something unexpected appeared again. No difference was remarkable until the tenth generation. The queen of the tenth generation laid many drone-eggs in worker cells besides worker-eggs. In every generation this evil gets worse. Soon two-thirds of the eggs laid were drone-eggs, and in one case with the sixteenth, and in another with the eighteenth generation, not a single worker egg was laid, and so the experiment stopped. The spermatheca of these queens were full of spermatic fluid and nothing was to be seen to explain this fact.

This is very interesting again and proved that theory is sometimes mistaken. The common result of in-breeding is barrenness and so we concluded that by in-breeding, the prolificness of the queens would be eventually lessened; but we overlooked the fact that the several functions of bees are somewhat different from other animals. Nature works in a more radical way. A queen not prolific enough would be superseded by the bees, but a drone-egg-laying queen is sure death of the colony, and so nature breeds out the incestus.

Some beekeepers believe they have observed less prolificness of queens caused by in-breeding. This is an excusable mistake. We expected this result and if the fact of less prolificness appeared by any unknown cause, we were at once willing to find the cause in in-breeding. But nobody before Mr. Vogel or besides him, had experimented with so many generations, and every beekeeper acquaintad with queen-breeding can tell what amount of time, labor and patience is required to do such experimenting. More credit belongs to Mr. Vogel as he could not expect any income in dollars and cents by his experiments, but the love for the science only was his motive, and the important results his salary.

By these experiments we see on the one side, the result of in-breeding, but on the other side, that a moderate in-breeding is not as dangerous as some beekeepers think it is.

Thus the new races of Wm. Vogel are the product of in-breeding. Of course Vogel did not select the nearest related drones for this purpose. The same fact was proved before by Dr. Dzierzon, who received the first Italian colony in Germany, and never bought another queen of this race. His strain of bees is the progeny of a single queen and is not excelled by any imported stock; and in many respects his queens are better, because he selected the best queens to breed from for many years. Others have done the same.

Further, it is necessary for the existence of bees in the wilderness, that moderate in-breeding is not fatal to the colony. We know that some swarms go many miles and start a new home, and here they are obliged to in-breed for further existence.

In fact it is impossible to get any new strain of bees, without moderate in-breeding. We remember the plan spoken of by Dr. Tinker, page 2 of "Api," to send out virgin queens to be mated in other apiaries. I suppose this plan would work to the best advantage. But now rises the question how to get out of this one colony a new and constant fixed strain? It is impossible without some in-breeding. We should use it, of course, as little as possible.

I will only remark, that our best races of other domestic animals are bred by moderate in-breeding.

Selma, Texas.

For the American Apiculturist.

"HONEY-MAKING."

G. G. Groff.

Popular ignorance of natural history is very common. However, if people would only keep their ignorance to themselves we could not so much complain, but when the most absurd and untrue things are introduced into books to be taught the young it is too much for us to remain quiet. We recently observed in one of our best school physiologies, written by an intelligent medical man, the statement twice repeated, that honey is an animal food, that bees make honey. "They take clover and transform it into honey, somewhat as the cow does into milk." A new book on psychology just published, in the chapter on "Instinct," repeatedly affirms that bees "make honey," that "they visit every open flower," that "instinct is infallible" and many similar statements, which clearly show that the writer knows nothing of which he writes, except as he has learned it from text-books, and text-book natural history is about as good as none at all, or worse. We were recently asked to endorse such a book; and, declining to do so, were sent a long list of testimonials to examine. *Not a single one of them was given by a scientific man.* There is yet room for improvement in scientific work in our schools.

Lewisburg, Pa.

For the American Apiculturist.

PRACTICAL HINTS.

By Prof. A. J. Cook.

MOVABLE BOTTOM-BOARDS — THE IDEAL HIVE — SLATTED HONEY-BOARDS — THE TIERING-UP METHOD — CONTRACTING THE BROOD-CHAMBER — TWO NEW LINES OF INVESTIGATION.

Dear Mr. Editor: You ask me to send practical hints as to apparatus or methods that have met my commendation in actual practice.

As to hives, I still like the movable bottom-board. It permits such quick and ready cleansing in spring, and enables one to raise the hive up an inch or two from bottom-board in the cellar in winter. I have tried this with marked satisfaction for years. True, one has to nail in shipping or moving hives to better pasture, but with our present wire nails this is very quickly and easily done. Again, we cannot feed by turning syrup or honey right into the hive, but that is a doubtful proceeding any way.

A PLAIN HIVE.

Again, I am very glad to be rid of old bevels *a la* Simplicity hive, telescope covers, etc. Not only are plain connections as hive on hive or cover on hive, cheaper, but just as good in every respect and by far the most convenient arrangement, as it makes manipulation far more simple. Except for the rabbets, then, which permit the frames to set down just the scant three-eighths of an inch from the top, our hive is only a simple box. Such in my judgment is the ideal hive.

SLATTED HONEY-BOARDS.

The slatted honey-board, with perforated zinc between the slats to make it queen-excluding, is a grand acquisition to the beekeeper. No one should neglect this article and no one will be without it after a fair trial. This should break joints with frames below, and should give the scant three-eighths space between slats and frames, and also between slats and sections above.

I regard the tiering-up method as the way to secure great amounts of nice comb honey; also the way to get extracted honey most readily and cheaply. The simple hive makes using double or triple stories for extracting very convenient, and also makes the tiering up or adding cases of sections very easy.

CONTRACTING.

Contracting the brood-chamber at the beginning of the honey harvest is also a method that is almost revolutionary in beekeeping. Messrs. Doolittle and Hutchinson have pushed this idea none too strongly. Whether we accomplish this reduction by using hives in horizontal sections, or by removing frames, it perhaps matters not, but we must use the principle would we win the best success.

All of the above have been faithfully tried in our apiary and I feel confident that they are worthy and may well be adopted by all.

NEW LINE OF INVESTIGATION.

Under the new Hatch Bill I am going to undertake two new lines of investigation looking to the advancement of beekeeping. First, I shall select and breed with great care to secure a better bee. I have been at this for some years, using Syrian and Carniolan stock. The other is to experiment to see whether it will pay to plant for bees. If so, what?

Agricultural College, Mich.

[The above was intended for the March issue, but was mislaid.—ED.]

For the American Apiculturist.

LOCATION OF THE APIARY.

Can beekeeping be made profitable in the following described location? The bees have to go north two miles to a field of white clover of 500 acres, east one mile to 10 acres, south one mile and a half to 18 acres of common timber, no basswood. On the west two miles distant are 300 acres of white clover—READER OF API.

ANSWER BY G. W. DOOLITTLE.

If I believed as some claim to believe, that bees only fly one and one-half miles in search of food, it would not take me long to say to the querist, you had better let beekeeping alone if you have no better location than the one above described, for surely the

ten acres of clover within one mile, and the eighteen acres of common timber, would do little toward supporting an apiary. But as I believe that bees fly from choice, from two to four miles from home, and from five to seven miles when necessity requires it, I will try and tell our correspondent how I would manage an apiary under like circumstances. But first, let us look for a moment into the matter of how far bees fly, for most people do not like to take a mere assertion as proof of a reality. About the year 1868, a gentleman living in Marietta, a small town three miles distant in a straight line, purchased some Italian bees. The next spring (before I had any Italians or there was any near here), I was watching the bees at work on apple blossoms, and presently saw an Italian at work. Upon examination, I found that the average was, one bee in five were Italians, and this with apple blossoms in profusion everywhere. Again: in haying, that same season, as I was cutting a field of clover one mile from home, or four miles from these same Italians, I saw bees at work on the clover. Having heard so much about Italian bees working on red clover, I jumped of my machine, and, to my surprise, counted five Italians to two blacks; with fields red with clover everywhere. Then, in time of basswood, I have often known the bees to follow the receding bloom up an elevation of ground we have to the southeast of us till they were at work entirely on bloom five, six, and seven miles from home, but at this last distance (seven miles) I was not sure that they made much more than a living. If any one still doubts, all they have to do is to read the writings of Mr. March, in "Gleanings" for 1882, where they will find how his bees worked across a strip of water, five and a half miles wide, and later on filled their hives and gave some surplus off of golden-rod which bloomed seven miles away from his bees. But how shall our questioner work his bees so as to secure good results in his locality? According to his account of it, he has but about 828 acres of bee pasturage, all told, and nearly if not quite all of this is white clover. This will not allow of keeping a very extensive apiary, without overstocking his field. Thirty to forty colonies would be all I should expect to do well under such circumstances, and if rightly managed probably twenty to twenty-five would give a greater cash income than a larger number. As the yield is to be wholly from white clover, the thing of most importance to be considered is how can we get a full force of bees in time for the harvest. To do this, where the blossoms yielding honey come as early as does white clover, is something that requires all the skill that is at the command of the very best of us, for it requires that brood in abundance be raised early in the season. Almost everything in producing comb honey hinges on this one feature. I cannot recall a single instance when my bees were in good condition, when the honey harvest arrived, that I did not get a fair crop of honey; but I remember that I came very near a failure several times, because I could not get them strong for the harvest. The best way to get colonies strong, early, that I know of, is to confine them, as soon as spring opens, on just as few combs as possible, in accordance with the brood they have at that time. If they only have brood in so few combs, that in shutting them into those combs, they are crowded out past the division-board, the prospect of success is so much the better, for then you

will be sure that in a short time, these combs will be full of brood, clear down to the bottom corners, when you can insert an empty comb, or one full of honey (the latter always preferable if you have it), and in a few days that will be full of brood also; the bees converting the honey into brood so quickly you will hardly realize it. In case the honey is used, the sealing to it should be broken before it is given to the bees. When young bees begin to hatch plentifully, so as to take the place of the now rapidly-dying old ones; or still better when two young ones hatch to where one old one dies off, the work of building up can be pushed rapidly, by inserting two or three combs in the centre of the brood-nest every week. In this way it should be no trouble to get bees in time for the harvest, providing you have colonies of bees in suitable strength to commence with. This you will have, if your bees have wintered well. If they have not so wintered, then you had better build them up as fast as possible, and double them up a week or two before the harvest, as I have often advised, when telling how to run an apiary without any increase. If you can use chaff-packed hives or boxes extemporized for the time being, filled with chaff, fine hay, straw, dry sawdust, etc., to put over and around the bees so as to keep an even temperature during our fickle spring weather, it will help you much in getting the bees early. It would be better of course to have a more favorable location than the one described, but most of us have other ties that bind us where we are, besides the bees, and so we have to put up with such an one as we have, and the man is to be honored that can be contented and bring about good results with only limited bee pasture at his own home, where duty calls him to remain; as much so, according to the conditions, as the President of the United States.

Borodino, N. Y.

For the American Apiculturist.

PREVENTION OF AFTER-SWARMS.

Constantia, Ohio.

What would be the best plan to prevent after-swarms?

MRS. W. O. C. CALKINS.

ANSWER BY J. E. POND.

In answering this question, I am not egotistical enough to assume that the plan I outline will be found the *best* plan. I simply give my plan, with the assurance that it works well with myself. No fixed rule can be laid down, but the general rule of giving ample room is safe to follow; the question being as to when and how that room shall be given. Afterswarming I consider to be the result of an abnormal condition of the colony, and my first step would be, to ascertain the cause. If I could find none, I should at once change the queen.

If the colony has ample room in the brood-chamber in which to rear its young, and ample room in the surplus chamber in which to deposit its honey, but little trouble will be found with afterswarms, in a normal colony of bees. Ample room may, however, be given in such a way that it is not utilized for the purposes desired; that is, honey may be deposited to such an extent in the brood-chamber as to leave no room for the queen to deposit eggs, and thus the difficulty arises of her being forced into the surplus chamber, and a nice lot of comb honey is spoiled.

Some six years ago I began a series of experiments, that I have followed up ever since, with several certain results. All the brood is

reared in the brood-chamber, all the honey is deposited in the surplus department, and the matter of swarming is fully under my control.

I was led to these experiments by the knowledge that bees always rear their brood in cells seven-sixteenths of an inch deep, and never seal it up in deeper cells; and that they always deposit stores in much deeper cells if room is given for the purpose. On those facts (and that they are facts, anyone can easily prove), I built my theory, which was this; if I can so fix my hives that no cells in the brood-chamber can be built deeper than $\frac{7}{16}$ of an inch, and at the same time give the bees a chance to build as deep cells as they choose in the surplus department, why have I not solved the comb-honey problem, and got full control of the matter?

I then (using the L frame $\frac{7}{8}$ of an inch wide) shaved the brood combs to $\frac{7}{8}$ of an inch wide, and spaced them in the brood-chamber, just bee space apart. By this means the cells must all be kept $\frac{7}{16}$ of an inch deep. On the approach of the honey season, I gave ample room in the surplus department, with the result from first to last that the theory I had formed was practical and practicable. I also found that swarming was equally under my control. If I wanted swarms, I gave less surplus room, and got them. With ample room no swarms issued at all.

The plan I have imperfectly outlined above is the best I know of for preventing excessive swarming, and it has the further virtue, that it accomplishes a work that has been found difficult with many, viz., the producing of surplus comb honey. I have tested this plan for six seasons; others have tested it also, and I have found the same results to follow in every instance. One thing if no more is in its favor; it does not require the expenditure of a single dollar for patent hives; it can be applied to any hive that carries a suspended frame.

I give the plan as my idea of the best, and hope it will be tested, criticised and improved upon.

North Attleboro, Mass.

For the American Apiculturist.

SMOKING BEES—FEEDING BEES.

ANSWER BY A. N. CLARK.

1. How often can we smoke the bees to open the hive without injury to the colony?
2. Is it a good plan to feed the bees in the spring so as to stimulate early brood-rearing? If so, how early?

MRS. W. O. CALKINS.
Constantia, N. Y.

1. Excepting during a honey-flow, I think bees can, without apparent injury, be smoked as often as it is necessary to handle them.

Mr. A. I. Root and many others advise us to use as little smoke as possible. Now, while it is possible to open hives with little or no smoke, I prefer to blow two or three puffs of smoke in the entrance before raising the cover. This tends to subdue them so that they do not take wing; consequently are less apt to sting, and will better cling to their combs when handled, and by always keeping our bees in subjection we tend to breed a better dispositioned strain.

Undoubtedly, if all apiarists would judiciously use plenty of smoke, we should hear of less instances of municipal corporations deciding bees a public nuisance.

During a flow of honey little smoke, is needed, as bees are too busy to pay any attention to ordinary disturbances; much smoke would tend to confuse and discourage, thereby retarding them in their work.

2. There is no object in feeding

to stimulate brood-rearing when bees have an abundance of stores. However, if they lack stores, commence to feed as soon as they begin to gather pollen. At all times during the spring, a hive should contain at least five pounds of honey or syrup. With a visible supply of but few ounces, bees are not inclined to breed rapidly.

East Leroy, Mich.

SMOKING BEES.

ANSWER BY WILL. M. KELLOGG.

Constantia, Ohio.

MR. ALLEY: Please answer the following question through the "API:" How often can bees be smoked enough to open and examine the contents of the hive, without danger of injury to the colony? MRS. W. O. C.

This depends very much on how you go at it. When I first began beekeeping, I thought that bees needed about as much urging with s noke as a lazy pair of mules does with a whip, and that is nearly all the time. In opening hives, and handling frames, I thought the bees ought to stay down. Once I had told them to with smoke, and if a few got tired of lapping honey, and came poking to the top to see what I was about, or get a sniff of fresh air, I would stop work, grab the smoker, and give them a fresh dose. Time and again the consequence would be the whole mass would come boiling up over the sides of the hive, making me lots more work to get them in again to close the hive.

Gradually it was forced upon me that a very little smoke sent the bees into the honey lively. There is little need of opening hives as often as it is done, but it can be done every hour of the day with no injury, except perhaps to slightly lessen the honey yield, for certainly it will check some of the bees in their work, and so retard their flight to the field just that much. It depends, too, on how much of an examination you make. To open a hive, take out one or two frames and stand against the outside, then take out, look carefully over, and move to one side the balance of the frames. I should call once a week often enough. But to give the stock one puff at the entrance, then carefully take off the cap, as carefully raise one corner of the quilt, giving now and then a little puff over the top of the frames, not down into the hive, making slow motions, and as carefully pry over one or two frames, then take out one and look at it—perhaps two or three,—in this way have I many a time opened hives with not a bee taking wing, the workers coming and going at the entrance, going on with the hive work, and seeing the queen depositing eggs as though that were the way she was used to. A very little smoke will do at most times; and when you have to handle bees with the smoker constantly in one hand and fairly fight them, just then is the time that once a month is too often, and the work should stop.

Oneida, Ill.

THE DRONE-AND-QUEEN TRAP.—MATING QUEEN.

In Vol. 6, No. 2, of API, page 45, you say in substance, that by the proper use of your drone-and-queen traps you can mate your queens to any drones you choose. I fail to catch the idea. L. L. Hearn says it can't be done. If it can, I *want one.* Will you explain? I am only a beginner, but I want to *go to the top* with best hives and other implements and best system of management.

T. K. MASSIE.

[We will try and make this matter a little clearer for the querist. There is no trouble in our apiary in getting queens mated to any drones in the yard by the use of the traps.

The metal we use on the traps will not allow a virgin queen to pass through and we have no need to use the trap for that purpose. As we place the trap at all

hives except the one (possibly two hives) which contains the drones we use for mating our queens. Now if our colonies were to have their way about swarming as much and as often as they are allowed to, the trap would need some metal with larger perforations so that the young queens could pass out for a flight. All that trouble is done away with in the Bay State apiary. When a colony swarms, at the proper time the queen-cells are removed and a fertile queen introduced, generally the queen that leads the swarm. When a swarm issues, the queen is caged and taken away from the hive for a few days, the cells removed, and then the queen is introduced again.

Now, in case the cells are not removed, but a young queen is reared, she can be compelled to meet a drone from any colony the apiarist desires, by simply removing the metal from the trap and replacing with a piece that has slightly larger perforations. While the virgin queen can pass the metal, the drone cannot. Traps thus arranged would cost but about twenty-five cents more per dozen, and as the time required to change the metal would be but a few minutes to the trap, it seems to us it would pay for the trouble. Some such arrangement as this must be devised if we are to improve the races of bees and prevent in-breeding.

If all who keep bees would show the same disposition as Mr. Massie, there would be less rattle-traps in use in the shape of bee-hives and other fixtures used in the apiary.]

FERMENTED HONEY.

New Rochelle, N. Y.

Can I do anything with honey that has begun to get sour? I have it in a deep can. It looks very thin. I have seen in some book that though it may be sour on the top the lower part may be perfectly good. Is that so? MISS R. MARAGLIANO.

[Place the can of honey in water and then gradually bring the water to the boiling point. Do not boil the water long, but keep it as near the boiling point as possible.

Keep the honey at that temperature for several hours, and as the scum rises remove it. The heat will evaporate the water from the honey and the flavor will be much better then it was when the honey was in the fermented condition.]

RED CLOVER BEES.

Florence, W. Va.

Some parties advertise bees that will work upon red clover. Is there anything in that? Will you please answer in API?

G. W. HARTMAN.

[Yes, there is something in the statement that bees will work and gather honey from red clover blossoms. I never saw bees of any race or strain that would not do it.

No bees will gather honey from the first crop of red clover, but all will work upon the second or seed crop and get more or less honey from it. Occasionally, there is a season when the weather is just right at the time second crop of red clover is in blossom for nectar to secrete and at such time bees will be found at work upon it. The honey is very good, but rather dark.]

BUCKWHEAT HONEY.

Will buckwheat blossom and yield honey in the summer if sown in the spring? We have nothing but fall honey in this section.

J. N. E.

[Yes, sow the seed early in July, or it will do at most anytime in July. We like to sow the seed early so as to have the bees work upon the blossoms before the frosts kill the plant. Sow the Silverhull buckwheat.]

HIVING SWARMS.

DEAR API: For the benefit of those who do not use the drone-and-queen trap I will tell how I manage swarming. Just before the

swarming season begins get a number of small evergreen trees, such as spruce, hemlock or fir, sharpen the trunks like a stake and set them in a hole in the ground loosely, in different parts of the apiary, and nine-tenths of the prime swarms will alight on them; when they can be lifted out and carried to the hive and dumped. It is the quickest way to dispose of a swarm.

S. B. H.

For the American Apiculturist.

REPORT OF SEASON OF 1887.

F. A. SNELL.

As I have seen no report in the API from this section of our state for the past season, I will now give my own. Our bees were removed from the cellar in the early part of April in excellent condition. Soft maples were just beginning to bloom, and just at that time the weather was fine. Two days later a cool spell came with some freezing, which killed the bloom, and high, cool winds followed, preventing the flight of bees. Fruit bloom and that from white willow followed, with only a very few pleasant days during their bloom, cool high winds prevailing much of the time. Raspberries followed but did not appear to yield much honey. White clover came about two weeks earlier than usual, and bloomed very sparingly, owing very much to the dronght of the previous season.

The drought, prevailing during and after clover bloom, dried up the blossoms and we were obliged to abandon all hopes of any surplus from that source.

We then looked forward to basswood bloom, hoping to see our hives stocked with honey and also secure a surplus. The bloom came and was quite plentiful, but lasted but three or four days and there was very little honey in it; not enough to start any work in comb building, even in the brood-chamber. When no honey could be obtained, the bees remained in a half dormant state, very few bees leaving the hives, except early in the day. The weather was very hot. The second crop of red clover seemed to yield some honey and with buckwheat and wild flowers, bees gathered sufficient stores to keep up brood-rearing in our apiary, and enough for winter, with a few exceptions. The season again proved the superiority of the Italians over the blacks. We keep only Italians. Black bees starved out in July and August. Drones were killed off in June, and none were reared after, until September 1, when a few were produced. Not one square foot of comb was built in our apiary of 125 colonies.

Thus the season of 1887 ended with us. Surplus honey crop was an entire failure. I have kept bees nearly thirty years, and had thought that I had seen about all kinds of seasons, but the past one is far ahead of others in the line of a failure. We had a chance to see something new.

Our bees were put into winter quarters on Nov. 16, and so far, appear in good condition. Such seasons, I think are something of a blessing in disguise. The persevering beekeeper will get his reward; the careless will have to step down and out.

Milledgeville, Ill., Jan. 14, 1888.

APICULTURAL STATISTICS.

DEAR MR. EDITOR: Soon after coming back from the National Convention at Chicago, I wrote very fully to the commissioner of agriculture, and gave my letter to Pres-

ident Willets, who was to visit Washington, and asked him to press the matter personally, which he kindly consented to do. He wrote me from Washington that the head of the Department promised all possible aid, and asked that we should suggest how he could best serve us.

The commissioner has also communicated with Dr. A. B. Mason—see last number "American Bee Journal"—and again asks for aid.

The committee, consisting of Dr. A. B. Mason, Mr. T. G. Newman and myself, suggest that beekeepers all through the United States, write at once to Mr. T. G. Newman, and offer service as reporters of statistics. The commissioner wishes two for each county. While we can hardly hope for so much at first, the nearer we approximate to it, the more value we shall receive. Let every beekeeper, then, proffer service at once. Then the committee can select by lot or otherwise from counties where more than two offer. Surely beekeepers will be prompt and generous. We ought to have a good corps of correspondents, from each state, and one at least from each county, in those states where beekeeping is an important industry.

The commissioner will send out blanks to fill out. The nature of these as to "How bees wintered? What per cent of a full crop of light honey in June and July was secured in four sections? What per cent of a full crop of autumn honey did four secure? What honey plants are valuable in four sections?" etc., etc., will be considered later by the committee. Now for volunteer reporters. By order of committee.

A. J. Cook.

Will other bee-papers please copy.

[We hope the parties interested in the above most excellent scheme, will be more successful in obtaining statistics than the manager of the API has been. We have sent out upwards of *three thousand* blanks embodying virtually the same questions as the above. Up to date very few of those blanks have been returned. Are beekeepers as a rule more shiftless and careless than other people? Certainly they take very little interest in bee matters. Each one was furnished with an addressed envelope, but that was no inducement for them to send the desired information. We will bet two to one that if 10,000 blanks are mailed to as many beekeepers, not ten per cent of those who receive them will take the trouble to fill them out. That is our experience. Wonder if this lack of interest does not account for the failure of many of those who undertake beekeeping?]

THE OTHER SIDE.

To the Editor of the Weekly Sun—*Sir:* Please tell me about the "new bee plant" pleurisy root (*Asclepias tuberosa*). I shall soon import some seed of it for planting. I would like to know when to plant it, how to cultivate it, and its time of flowering. Are the flowers pretty? Florist, Paris, Maine.

The so-called new bee-plant—*Asclepias tuberosa*—is a very common weed in dry soils, along roadsides, and in all pastures throughout the eastern states. It is known by several local names, such as pleurisy root, butterfly weed, and tuberous rooted milkweed. The roots at one time had the reputation of possessing medicinal properties, but it is now generally discarded. This species of milk weed has very large, tuberous roots, which live to a great age, and on account of their size are somewhat difficult to eradicate by ploughing out. The flowers are quite showy, and of a bright orange color, usually appearing in July, and the plants continue in bloom until autumn. Whether the flowers will yield sufficient honey to pay for cultivating the plants in any great numbers is exceedingly doubtful, although some apiarists claim that a large quantity of honey is gathered from the flower of this species of milkweed. The late Mr. Quinby, in his "Mysteries of Beekeeeping," explained "that a singular fatality befalls many bees while gathering honey" from the common milkweed (*A. cornuti*). The cause of this fatality was the accumulation of scales of milkweed pollen on the feet of the bees, which prevent their ascending the sides of the hives. The flowers of other species of milkweed have the same or very similar pollen masses, and for this reason are dangerous and likely to be more destructive than beneficial to the honey bee. Any collector of native plants, however, will supply you with roots or seed of the so-called "new bee plant" if you still desire to try it. It is an ornamental plant, and often cultivated in gardens in this country as well as in Europe.

The American Apiculturist.

Published Monthly.

HENRY ALLEY,
MANAGER,
WENHAM, MASS.

TERMS: 75 CTS. PER YEAR.

Wenham, Mass., April 1, 1888.

THE MANAGER'S CORNER.

Bee Spaces.—Several parties who have the Heddon hive in use say that the bee space between the two hives is so large (three-fourths inch) that the bees build in between and fasten both hives completely together.

Although we have kept bees nearly thirty years, we did not know that it required a space of $\frac{3}{4}$ of an inch for a bee to get around in. If we read correctly, another noted bee man uses a bee space as large as Mr. Heddon.

We never allow over $\frac{1}{4}$ of an inch space except under the bottom of the frames. A space $\frac{3}{16}$ of an inch is large enough between the honey-board and top of frames or between the honey-board and sections. Those who use a similar space will have no trouble from the bees filling in and sticking the frames together.

Every frame-hive should have a top-bar of from $1\frac{1}{4}$ inches wide (eight frames $11\frac{3}{4}$ inches) and a space of $\frac{1}{4}$ of an inch over and at the end of the frames, and $\frac{3}{8}$ of an inch to $\frac{1}{2}$ of an inch under the frames. Those who will adopt this will have no trouble about the bees sticking the frames in or building between them.

We can hardly believe that Mr. Heddon allows so much room. It must be that some bungling workman, and one who knows nothing about bees, has made the hives complained of. Mr. Heddon should at once rectify this serious defect in the construction of his hive and Mr. Frank Cheshire should also be taught that bees do not require $\frac{3}{4}$ of an inch to get from one part of the hive to another.

"The Beekeeper's Review" for February came to hand on March 12. The delay was owing to the severe sickness of its editor. As we have received a number of subscriptions for that paper this will be an answer to those who have inquired of us concerning its non-appearance.

We are glad to note the improved condition, not only of Brother Hutchinson but of his paper. We have no doubt that the "Review" will have a large number of readers, which it certainly merits and deserves.

Brother Hutchinson agrees with us as to the value of the query department in bee-papers. He says "The replies are necessarily so brief that in many cases they offer but little satisfaction." Though the Api was the first to adopt the query department, we never have conducted it on the "yes" and "no" principle. When the questions have been sent for replies we have requested that complete answers be given.

We have been so *disgusted* of late in reading the answers in some of the bee-papers that the query department was dropped from the Api with the February number. Something new in that line will be noticed in the future issues of our journal.

Closed end Frame Hives.—The Bay State Reversible hive has a closed-end frame. Let those who think we are the only one who is using such a hive read the following, which appeared in the AMERICAN APICULTURIST some years since from the pen of P. H. Elwood:

"Let those who consider the hanging frame the only fit domicile for the honey bee recall this list of names; Quinby, Dzierzon, Abbott, Hetherington, Dadant, and then acquaint themselves with the merits of this new hive before condemning it." Try a B. S. hive and satisfy yourselves that it has real merit.

While most all the bee-papers have filled their columns the past three months with reports of conventions, we thought it best to get our regular contributors to supply our paper with something equally as acceptable and interesting as such reports.

It strikes us that the papers have worked those reports rather hard the past few months. Interesting and important subjects should be continued as long as profitable to the reader.

Bees are wintering well, so comes the report from all quarters. Supply dealers may expect a boom in business from May 1 to July 1.

Be prepared to fill orders promptly thus saving much loss and vexation to all concerned.

Lewis Dalberg, Oxford Furnace, New Jersey, has one new Bay State and one new Standard L. hive for sale. He has adopted Lizzie Cotton's hive as a standard. He likes the latter hive very much. We think it the meanest arranged and the worst old rattle-trap of a hive yet devised. How a bee-keeper of any experience can adopt such a thing to keep bees in at this enlightened age of bee culture is more than we can comprehend.

While we are speaking about the Cotton hive, we may as well say something about the inventor of that worthless old clap-trap.

A. I. Root, in noticing Mrs. Cotton's circular in "Gleanings" says: "I think she does all she agrees to." Well, if by sending out a pint of bees without a queen and a small piece of comb in the hive is a full colony, for which she charges $20, is doing all she agrees to, it may be all right. Our idea of a full colony of bees is this: There should be, at least, eight L. frames filled with comb, brood and honey, a good queen, and bees enough to cover all. That is what we send out for a full colony, and a hive which is not an old rattle-trap, and worth less than ten cents.

The idea of purchasing one colony of bees for $6, dividing it up into ten or more colonies and then selling them for $20 each is a good way to make money, also to cheat and defraud innocent people. A person who is mean enough to do that business and the one who will sell rum will surely have plenty of money. We have about the same opinion of the one as of the other.

You must bear in mind that the writer of this has been through the "Cotton press," and knows whereof he speaks. We had the pleasure of driving one C. B. Cotton out of business.

Nearly twenty years ago that gentleman advertised that he had the best strain of Italian bees in the world. We gave him an order for two colonies, paying $40 dollars cash for them. After some delay the bees came to hand. There was not one healthy cell of brood in the hives. All were as rotten as could be of foul brood. We could get no redress. Soon, C. B. C. retired from business and Mrs. L. C. took it up and has conducted it since. We guess it is the old C. B. C. at the helm. Now Brother Root, give the old lady another puff.

Mr. Frank Cheshire says he does not agree with Mr. Alley in all he says of queen-rearing. Well, suppose he does not. When Mr. Cheshire gets a better knowledge of beekeeping he may discover that we are correct in all our statements.

We never saw one of the many books Mr. Cheshire has written.

Just what Mr. Cheshire's criticisms of the "Handy Book" are, we do not know.

We cannot yet spare the room in the API to show beyond dispute that Mr. Simmins, in his criticism of our manner of rearing queens, does not know what he is talking about. We shall get to it by and by. When Mr. Simmins and Mr. Frank Cheshire present a better method for rearing queens than is given in the "Beekeepers' Handy Book," then we will acknowledge the corn. Don't stand back, gents, trying to make people think you know more than what you really do. We have given the result of thirty years' experience in queen-rearing. Please show wherein our system is wrong. Merely saying you do not agree with us amounts to nothing at all.

The articles on the "Prevention of Increase," which first appeared in the APICULTURIST as *prize essays* have been published in the "British Bee Journal" They may be found in the January issue of our journal and should be read by every beekeeper. Each number of the API during the present year will contain several articles, any one well worth the subscription price of the journal. We have the copy for the articles and know whereof we speak.

An article on the above subject from the pen of P. H. Elwood, of Starkville, N. Y., will soon be published. Mr. L. C. Root has spoken so highly of Mr. Elwood as a practical beekeeper that all will look forward to the appearance of the promised article.

The person who says bees never sting queens and those who contend that a swarm of bees intending to decamp do not first clean and prepare the new home, are people who do not study the bee understandingly. We will not say that in all cases bees will first clean up an *old* tree before they occupy it, but when they issue from their own hive and go directly to another they certainly have been at work in the new home several days before they attempted to occupy it.

The Api. In speaking of our paper the editor of the "Beekeeper's Review" remarks thus: "In our opinion this journal contains as much information as any bee-paper in this country. Its editor may well be proud of its corps of contributors. The March number is at hand and is full of good things."

Shipping Queens. We are now booking orders for queens. Many of our readers want to know how early we can ship them. June 1 is as early as we can promise queens to any one. Our customers should realize that in order to get queens ready to ship as early as the above date, we must "start them" by the 8th or 10th of May. Well, to get bees in condition to rear queens at that early date requires considerable labor. In order to do that bees must be fed early in April to stimulate brood-rearing. We usually get about a dozen colonies in the right condition for queens by May 10. After that time no extra labor is required to "get up" a strong colony either for cell-building or for honey gathering.

During the month of April it is a good idea to stimulate bees to breeding and in many cases bees must be fed, or starve. Who of the readers of the API can send us a good, practical receipt for making a "sugar-cake" that will not soften and run down among the combs if placed on the frames, and yet be so soft that the bees can easily and quickly place it in the cells?

To the one who will forward the best receipt we will mail the API one year.

It costs us twelve cents to send a drone-and-queen trap by mail. We have arranged with the American Express Company to deliver them at any place, where they have an office, for 10 cents each. Those who can receive the traps more conveniently by Express will please so notify us.

The number of pages of the API devoted to correspondence and general articles is twenty four, thus leaving eight pages for miscellaneous matter, advertisements, etc. We claim the right to use the last eight pages for our own advertisements, or for any remarks which are in keeping with the rules of a first-class publication. We sometimes encroach upon the twenty-four pages, but not often.

GLEANINGS FROM CORRESPONDENCE.

THE MANAGER ENDORSED.

Meadville, Pa.

MR. ALLEY: The last season was a failure in surplus honey and it seems to take off the sharp edge of enthusiasm in the business, so my renewal was not so prompt.

I have 53 colonies in the cellar and 62 on the summer stands, all on natural stores so you see I shall need the light of our journals to direct me in getting the most out of them.

I like your independent course and even where I am inclined to differ from your views, I prefer to have you advocate your views with vigor and determination.

The ——— I like also in the main, but I would prefer if ——— would start a journal of his own, so he could ventilate his theories and patents and not inflict them on the readers of our old Bee Journals. *His* patrons would then get what they subscribe for.

READER OF API.

IT TAKES THE CAKE.

Battle Ground, Indiana.

FRIEND ALLEY: The AMERICAN APICULTURIST is truly a marvel of perfection in its make-up and mechanical design. The greatest wonder is how you can afford to furnish such a journal at the price. Your journal "takes the cake." May it live long and prosper under your management is my sincere wish.

G. M. HICKS.

A GOOD QUEEN.

New Rochelle, N. Y.

MR. ALLEY: Please find enclosed money order for another year's subscription to the API. This year has been as hard on me as on most others, but though I must give up two other bee papers I cannot do without yours; it has helped me over many rough places. My $2 queen is everything I could wish. Her progeny are beautiful and do not seem to care to come out except on real good days, while those of the other hives take every chance to fly. I would not take $5 for my queen. With many good wishes for your success,

I am yours truly,
MISS R. MARAGLIANO.

WELL PLEASED WITH THE API.

Stannard's Corner, N. Y.

MR. ALLEY: I have been a subscriber to the "American Bee Journal" for some time, but after reading the sample copy you sent of the API I conclude there is something I can learn from that also. NOVICE.

I ordered 10 of the traps this season, and I am satisfied they are all that they are advertised to be. I will send in spring to get a queen.

I have 27 colonies to transfer, and I think it would be a good time to change the queens. My bees are hybrids, but they are the best of honey gatherers. As poor as this season has been, I have taken from my best colonies 125 lbs. of honey in 1 lb. sections. Of course I worked them on the non-swarming plan. Thanks for the API you sent. Shall look for next copy eagerly. H. J. ROGERS.

HE LIKES THE API.

Macedon, N. Y.

I don't know much about bees or bee papers, but the API seems to me a very sensible journal. With it, a beginner need not fail if he can read and understand. It is plain. S. HOPKINS.

BEES READY TO SWARM.

Visalia, Cal.

P. S. My 72 colonies all wintered well, did not so much as lose a queen. Bees are now ready to swarm. Almonds bloom Jan. 1st, apricots and peaches March 1st. Our principal honey plant is Alfalfa (Lucern).

JOSIAH GREGG.

CONSIDER THE API BEST.

Grafton, Wis.

Thanks for the missing numbers of the API. I take three bee journals and think the API far the best. SETH SAGAR.

HE SAVED THREE GOOD SWARMS.

Bristolville, Ohio.

MR. ALLEY: Regarding the drone-and-queen trap I will say that I saved three good swarms by putting the trap in front of the hives the bees issued from. I sold two of the traps and each of them saved a swarm.

J. S. BARB.

GLAD HE DIDN'T DISCONTINUE.

Amana, Iowa.

MR. ALLEY: At the end of the past year I thought of discontinuing the API because it takes so much time to read and study three bee journals, but I must say that I am very glad I did not give it up for 1888, because it is *above all others.* It contains each month such valuable essays that I must say that almost any monthly edition is worth the price of the whole year. It is not valuable for beginners only, but also a good guide for more experienced beekeepers. I would also like to hear more about the question asked by me in the API (query No. 38) in the November issue; I had some idea about what answers would be given to that, but I thought best to have the answers of those experienced beemen.

In No. 1 of API of 1888, Dr. G. L. Tinker writes very plainly and satisfactorily about in-breeding. I had the same idea that it is better to get the young queen mated by drones of other colonies, or yet better, from drones of extra good queens because I have some experience in this and had read much, but never so plainly as in the API and in the "Beekeepers' Handy Book," although I have very many bee books in my possession and have studied therein. I have the works of Gravenhorst, Berlepsh, Krause, Dr. Dzierzon, Kanitz and so on.

JACOB WAGNER.

HYBRID, AS APPLIED TO BEES.

EDITOR OF AMERICAN APICULTURIST.—Dear Sir: I notice in the February number of the "API," that Dr. Tinker, in his answer to query No. 43, on page 42, takes partial exception to the use of the word hybrid. If you will refer to the query which I sent in regard to purity of drones from a cross-mated Italian queen, you will see that the word "hybrid" is not used.

The Doctor would restrict the use of the word to radical crosses between the yellow and black races, but I consider the term incorrect when applied to any of the crosses between races of *Apis mellifica.* Yours truly,

L. O. QUIGLEY.

Goshen, Orange Co., N. Y.

MELISSA AND ITS CULTIVATION.

MR. H. ALLEY.—Dear Sir: In reply to yours of Feb. 20, would say, that for an early crop of melissa seed should be sown as soon as the ground is fit to work in the spring, or if one wishes an *extra early* crop and does not mind the labor involved thereby, seeds may be sown in a hot bed like celery, tomatoes, etc., and plants transplanted can also be sown in the fall just before the ground freezes. If the soil is rich and it is desirable to cultivate with a horse, plants should stand 3 feet apart each way. Seeds will scatter so as to cover the ground next season. If planted in gardens and a hand cultivator is used, 12 inches apart each way is near enough. The tendency is to crowd too many plants into a small space. As plants often (in this locality) measure 4 to 8 feet in circumference, there is danger of dwarfing them if sufficient room is not given them to expand as nature intended. To produce the best results plants should be cultivated first season and weeds not allowed to grow. After first season if this is done plants will take care of themselves. *Please bear in mind that plants bloom first season.* Fowls are fond of the seeds and I think the stalks are excellent for fattening sheep if cut a little green before the seeds rattle out.

For continuous bloom from July till frost, I sow a month or a month and a half later than first sowing.

I am receiving from one to five letters a day from Maine to California, in regard to melissa and have sent out many plants this spring.

A. TYRREL.

Melissa seed can be purchased at the office of the API, at 35 cts. per oz.

THE HONEY FLORA.

Golden-rod.—The accompanying illustration represents one variety of the golden-rod. The bees work upon the blossom and get pollen and a small amount of honey. The variety which produces the largest amount of honey grows about one foot in height, straight, no laterals, and has but one bunch of flowers which bend over in a semicircle.

This latter species does not blossom until the last of August and continues nearly all through the month of September or until frost kills it. The honey gathered from it is

amber in color and not of the best quality, yet it is good for bees to winter upon, if gathered when the weather is dry. Dry weather is no disadvantage to the plant as it seems to thrive during the severest droughts, and upon the poorest sandy soil.

We intend to investigate the coming fall, for the purpose of learning whether this plant will grow from seed—and also whether it will pay to gather the seed. We will also present the readers of the API with an illustration of the best variety as soon as a plant to photograph can be obtained.

One of our Bay State Reversible Hives complete, including the surplus arrangement, weighs but thirty-four pounds. When packed ready for winter the weight of all will not exceed forty pounds. Thus it will be seen that most anyone can lift such a hive with ease. Another point is the fact that when one of these hives is sent by express the charges will not amount to more than the cost of the hive.

TO ADVERTISERS.

We will accept of bees, sections or foundation in exchange for advertising space in the APICULTURIST.

The Quinby Smoker. — A description of the improvement made in this well-known smoker was given in the API some time ago. We now have a lot of smokers on hand. This smoker, as now made, works as well as any bellows-smoker in the market. The good points are these: If the fuel is dry, a smoke can be had in a minute's time by merely applying a lighted match to the "fire-hole" at the base of the barrel. Those who use the old style Quinby smoker are obliged to go to the stove for a coal of fire in order to ignite the punk.

DOUBLE-WALLED LANGSTROTH HIVES.

OUR old style Bay State hive is the same as the Reversible hive. One has reversible frames, and the other is adapted to the standard Langstroth frame. This hive has every good feature in its construction that the Reversible hive has, except reversing the combs.

It can be used with or without the outside case in summer; the sections can be tiered up the same, and the section case is exactly as near the brood as in the Reversible hive. We have used this style in the Bay State apiary fourteen years and with good results. The price is the same as for the complete Reversible hive.

EXPIRATION OF SUBSCRIPTIONS.

When your subscription expires a cross, thus, ×, will be made over this notice. The same is intended as a kind invitation for you to renew your subscription at once. If you need the journal and cannot spare the money we will continue it, if requested to do so.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

Published Monthly. HENRY ALLEY, MANAGER.

VOL. VI. WENHAM, MASS., MAY 1, 1888. No. 5.

We deal in first-class apiarian supplies of all kinds, lowest prices. Prompt shipment.

Established in 1883. Terms: 75 cents per year, 50 cents per six months, 25 cents per three months. Cash in advance.

Any yearly subscriber is entitled to one of our selected queens anytime between June 1 and Oct. 1, by remitting 75 cts.

Address all communications, AMERICAN APICULTURIST, Wenham, Mass.

NOTICE. Some of our western friends have an idea that the *American Apiculturist* is published for the sole benefit of New England beekeepers. This is a mistake. We have more than double the number of subscribers in any one of the western states than we have in all the six New England states combined. Nearly all of our contributors are out-side of New England. We never could think of publishing a bee-paper for the few beekeepers residing east of the Hudson river.

After this issue our advertisements will not appear again in the API. The change in the form of our paper will crowd them out.

We shall now send out a circular and price-list, which anyone can have by applying for it.

For the American Apiculturist.

BEE NOTES FROM CALIFORNIA.

A. NORTON.

THE HONEY SEASON.

IT is a singular fact that our surplus season or period of bloom and honey-flow so closely coincides with yours in the east. This results in some advantage.

It may be comprehended easily from the following statement: The time of honey-harvest is from the middle of May or the first of June to the middle of July or first of August.

But bees can fly most any time. Rainy days will, of course, keep them in; but the percentage of days, when it is too cold for them to fly, is very small. Very early in the season they can begin gathering in a small way.

I have seen them bringing in pollen on New Year's day, probably from the Australian blue gum tree. But they find only an insignificant supply of honey or pollen before February 15 or March 1. Then comes the filaria, covering mountain and valley with its small pink blossoms. Then the colonies become busy. The little patches of brood grow larger, and the empty combs receive deposits of nectar, but remain unsealed for quite a time longer.

Thus the bees have a good start in brood-rearing and can easily become populous in time for the surplus season. Were the sages, buckeyes and hosackias so constituted as to bloom earlier; were the many flowers that do come early rich in white honey; or were the climate such as to insure white clover; the surplus might begin to come in much sooner than it does.

At this writing, March 6, the filaria has been in bloom a few days, but bees have been putting fresh honey in the combs for a couple of weeks. Probably the willow blossoms have furnished it. Now it is time to give the bees attention.

I prefer to have them strong as early as possible; therefore I think it better to double up all weak colonies making fewer and better ones.

If I want my number of colonies

undiminished, a swarm from these doubled stocks put on the empty combs in April will be stronger by the time of sage bloom than the weak stock would be.

SPREADING BROOD.

I have never made a regular practice of spreading brood, but I am sure that I have, by means of spreading, expedited the building up of the colony so treated.

I have by such means brought out bees that only partially covered two combs ahead of colonies that had covered five combs. With a sectional brood-chamber, the brood need not be spread; inverting or interchanging will do the work as well.

By doubling, or even trebling stocks, I expect with a little spreading to be able to repopulate my empty hives in good season.

In spreading brood with the common L. hive, I try to select a comb with brood about two weeks old to move to the outer edge of the cluster. Sometimes the turning of a comb end for end will cause more eggs to be laid on the reverse side without endangering eggs or larva. When the young bees begin to come out from the cells of an outer comb, the comb may be placed in the centre, and the queen will at once begin to deposit eggs in the vacated cells. I would not advise a beginner to spread brood until he had experimented carefully on one or two hives.

ABOUT HIVES.

In the matter of hives, I often think of the words of friend Demaree, in an article that appeared two years ago. "It is not so much in the race of bees, in the appliances, or the hives, as it is in the man who is using them." Nothing can be added to this. As a question of extra convenience, however, I can say that a sectional chamber Bay State Reversible hive is beyond question one of the best for comb honey. I have a half-dozen of them; and while the season last year was too poor to test them thoroughly, still I am satisfied that the Bay State is ahead of the Heddon and second to none. I have tried one Shuck hive and had one tried by Mr. R. Milkin of San Buenaventura, and another by M. Bray of New Almaden. The former gave a favorable opinion of it last season, but has not reported since.

The latter prefers the Bay State, I think the Shuck hive good, after it is made, but the making requires a factory. The Bay State Reversible hive is so simple that it may be made by any one, frames in the flat being the most needful thing to buy. I find it practicable to have these made by dealers on this coast, though at higher rates than in the east.

Rearing queens may be commenced in February or March according to the blooming of willow and filaria (fila-rē'a).

But, without special care, no drones will be had until nearer the first of April except in such early seasons as 1885 and others where my bees were swarming freely in April.

I have experienced great difficulty in getting purely mated queens. In 1886, I carefully looked up every bee tree within a three mile radius and Cyprianized the only bees within a mile. This not being much of a beekeeping community there were no other bees kept nearer than two or two and a half miles, and the next nearest were about five miles. Those that were two or more miles away were not over an eighth as numerous as mine.

And far more than half of my young queens were cross-mated. Directions for raising healthy queens and for successfully introducing them are now trite.

COMMISSION MEN.

I think that rather too hard things are said of the commission men. An impartial trial committee would give verdict of as many causes of complaint by city houses against farmers as the other way. In other words, it would show that dishonest parties are found in every calling, but that honesty and sound business principles govern the majority. Established business houses do not live by five-dollar steals. Their reputations are as important capital stock as is the coin they have invested. And a commission house that would do a good business cannot afford to steal and cheat, and it does not need to do so. Patronize houses of established reputation therefore, if you ship your honey, and all will be well. In addition to that, let local merchants sell for you on commission. Neat packages will always sell and you are saved freight and the trouble of putting up goods for transportation. But, if a man has merchants in town selling honey for him, I don't consider it just the right thing for him to go about in a wagon and sell, thus destroying the merchant's trade. If he goes beyond the field of the merchant's custom I see nothing wrong in it. But, for my part, if I cannot live in the bee business without, in addition to the other trials of the calling, going about peddling from house to house, I shall go into something else.

The present season is as promising as the last one was unpromising.

Gonzales, Cal.

For the American Apiculturist.

PLANTING FOR HONEY.

C. H. DIBBERN.

IN the November number of the APICULTURIST appears an article on this subject by Mr. R. L. Taylor, that is remarkable to say the least. Mr. Taylor seems to lament the time and money spent by bee-keepers for seed of honey plants, and then asks, "What are the practical results?" Mr. Taylor evidently belongs to that class of bee-keepers who think that after planting a small patch of sweet clover or other honey-yielding plants, they should ever after be able to take off case after case of fine honey as a result of their "competition with nature." I have advocated and practised planting for honey alone, for many years, and believe it has paid me well. It is true it is not easy to see just the amount of honey realized from a given number of acres planted, and we are apt to conclude, that the bees would have done just as well anyway. A little observation and thought ought to convince us that this is wrong.

Years ago, when I had less than one hundred colonies of bees, they generally did very well on the flowers that grew spontaneously, and I usually had considerable honey to sell. When my bees increased, however, to two hundred or more colonies, I seemed to have reached the point where in an ordinary year, they would gather just about enough to keep them through the year. I was not so situated that I could divide them up, and then resorted to increasing the bloom in my immediate vicinity. During the last few years I have had from one to five acres in sweet clover, and besides have it scattered far and wide in waste places. I now depend fully as much on the yield of honey from sweet clover as from either white clover or linden. My yield now per colony from two hundred is as good as formerly from one hundred.

Now, Mr. Taylor seems to think that because there are some 3,000

acres that produce some honey plants and flowers, although man and beasts are doing all they can to exterminate them, we ought not to try and "compete" with nature by spending time and sowing seed that he seems to think so valuable. We don't compete with nature at all, we simply assist and add to what nature is doing spontaneously. When our country was new we generally depended for small fruits on the wild strawberries that grew in the meadows, and the blackberries that grew over the hills; but the person now who does not raise these in his garden, or is able to buy them generally has to go without. There is another point to consider; an acre of honey-producing plants adjoining an apiary, is worth two or three acres, a mile or two away. Mr. T. seems to think that those who have advocated planting for honey would destroy all the other bloom in some way, and depend on their own planting entirely; that is not it at all. I would preserve all the natural bloom possible, and add as much by planting as I could.

Mr. T. reports producing some 6,000 lbs. of comb honey the past season. Now, suppose he had planted a few acres with honey plants and they had yielded 6,000 lbs. of honey in addition, is it not likely that his yield would have been 10,000 to 12,000 pounds? If not, why not? If so, would that not have paid him well? Is it not quite likely that were plenty of bees loafing around his hives, or trying to rob each other, that would have been busy at work had he given them a little encouragement?

Again, he seems to prefer to give his bees a "rest" after linden stops blooming. My aim for years has been to fill up this gap, and I think I gain much if I can keep the bees at work, if only moderately, during this time. I don't like to work in an apiary when all is as still as a graveyard except the horde of robbers, that follow one around. I also want to keep up breeding during this time, to have plenty of bees for the fall crop, which is often larger than the spring crop. I certainly agree with Mr. T. in liking honey floods, and the best way to make them is to do all we can to help nature to furnish them and lengthen them out, as long as possible. Where is the beekeeper who has ever objected to a week or two more of the white honey harvest? It is not only the additional honey gathered, but the finishing up of much that is in partly-filled sections, that makes such lengthening out especially valuable. Yes, Mr. T., there is much "food for thought" in this subject, and it is all in favor of a judicious planting for honey.

Milan, Ill., March 26, 1888.

For the American Apiculturist.

SOME EXPERIMENTS IN WINTERING.

G. W. DEMAREE.

THAT bees have been wintered as a general rule with fair success in the cold climates of the northern states under the conditions to which they are subjected in winter confinement, to my mind proves nothing more than that the honey bee possesses wonderful powers of endurance.

In the absence of better and more natural conditions perhaps an even or uniform temperature in the winter repository will give the most uniform results as to bringing bees through the winter in the possession of life. Under such conditions, that bees should dwindle and waste away in the early spring is the most natural conclusion in the world.

A uniform temperature of 45°, or any other uniform temperature is most unnatural, and I should think that any living thing would wear out under its influences, except in a state of profound hibernation. Reasoning from this standpoint, I have had a theory for several years that a better way to winter bees under such circumstances would be to keep them in a low temperature, perhaps just above the freezing point in very cold weather, and at intervals of about ten days raise the temperature in the repository to a summer temperature and keep it up for ten or twelve hours. My theory was that such a "warming up" would enable the bees to discharge by exhalation all surplus moisture from their bodies, external and internal; in other words, have the same effect as does a winter flight.

In order to test the matter, at the beginning of last winter I placed a small colony of bees in a fruit and vegetable cellar where the temperature goes down to near the freezing point, and at intervals of about ten days the hive was carried in to my office where the temperature was kept all through the day at a summer heat. The pad was removed from the top of the brood-chamber, so that nothing but a thin screen cover was left on to keep the bees in place. As the warm air of the room would begin to be felt by the bees they would gradually rouse themselves, and in a few hours they would send up a loud roaring like hot summer time. Just before night the pad was replaced and the hive was returned to the cellar for another interval of repose. The experiment covered one hundred days or till the fifteenth day of March, when the bees in the yard began to gather pollen from the *Elm*. On that day the hive was taken to the yard and placed on the summer stand, and the heroic little band of workers were carrying in pollen in an incredibly short time. These bees wintered perfectly, though they were subjected to the severest tests for experimental purposes. In the early part of February they were fed on warm syrup in which flour had been stirred while the syrup was hot, to try what effect such impure food would have on the bees in their confinement; and although the experiment was repeated several times, the bees were able to overcome every difficulty by means of the "warming up process." This experiment leads me to believe that bees can be wintered with perfect success in any tolerably close room, if so arranged that it can be heated up at the will of the apiarist. Perhaps a furnace could be constructed under the room so as to heat it more evenly than in any other way. The hives should be covered with wire cloth screens so as to give perfect upward ventilation when the pads or cushions are removed for the heating-up process.

To test the matter more thoroughly, I extended the experiment to four little nuclei with not more than a pint of bees each, already enfeebled by the first shock of winter, and by my new process I have brought them safely through the winter. They had no sealed honey and hence none fed on a mixed syrup, at intervals through the winter. The "warming-up process" solves the wintering problem."

Christiansburg, Ky.

From American Bee Journal.

PRICE OF HONEY—HOW TO CONTROL IT.

M. M. BALDRIDGE.

HAVING for the past thirty years had more or less experience in

handling honey, and having been satisfactorily successful in "controlling the price" of it, I will at once proceed to *outline* briefly my ideas of how to do it, and how others may do likewise. The plan is so very simple and practical, so it seems to me, that it should be readily understood by others even though it be not indorsed. It is as follows: To fix the price myself and sell only to consumers.

But, says one, that may do with a small crop of honey, but how would you manage with a large crop—one that you could not possibly dispose of at retail, and through your own individual efforts? In that case I would fix the price myself and sell to consumers through retail agents, and pay the agents a liberal commission for handling the honey and collecting the pay for it. But, says one, why not *sell* the honey outright to retail and wholesale dealers? Simply because that plan delegates to others the right to fix the price on honey to both dealers and consumers. When dealers *buy* honey it then becomes *their* property, and they then have the legal right to sell to others at cost, or at any other price they please. Not so by my plan.

Now let me illustrate my plan more fully, and as follows: Suppose I have, say 1,000 pounds of comb honey in small sections. As soon as the honey is secured, say in July, I would select perhaps five responsible grocers having a good trade, and as near my apiary as possible, and supply each of them with one crate of honey—about twenty-five pounds at a time, and no more. This would perhaps be enough honey for the month of July.

In August, or as soon as sold, I would supply the same grocers with the same amount of honey, and thus continue from month to month, or from time to time, until all is sold. This would perhaps cover a period of eight months, as each grocer, or retail agent, should sell, on an average, at least one crate of honey per month.

A crop of 2,000 pounds could thus be disposed of, and during the same length of time, by and through ten agents, and a still larger crop by having a proportionate number of retail agents. But my experience teaches me that honey should be kept on sale, *and in sight*, every month in the year; that more or less honey is wanted by consumers all the while, and that any grocer, worthy of the name, can get rid of at least one crate of honey during each month. This being the case, the average grocer should be able to sell not less than 300 pounds per year. By dividing the crop of honey in pounds by 300, this would give very nearly the number of retail agents necessary to dispose of any size crop the producer may have, in case he is willing to cover each month of the year.

Now about the pay: This may be collected at the close of each month, or as soon as each crate of honey is sold. By this means the producer runs no heavy risk in having his honey disposed of through retail agents. In case of an assignment, or bankruptcy, on the part of the agent, the honey on hand and unsold at the time belongs to the producer, and he has the power to remove it at his pleasure.

What about the commission for selling the honey and collecting the pay? The retail agent should have a liberal commission, so as to secure his hearty coöperation. As he has, however, no *cash* invested in the honey, a liberal and satisfactory commission to both parties would perhaps be from ten to twenty per cent on the retail price. I can find plenty of retail agents who would be satisfied with ten per cent net commission.

Now a few words about the retail price: My judgment, based upon experience, is that comb honey, in small sections, should retail from fifteen to twenty-five cents per pound, depending upon its quality and general condition, and not upon the weight or size of the package. Dark honey should retail at from fifteen to eighteen cents, and white honey at from twenty to twenty-five cents per pound, and the one-pound, one and one-half pound, and two-pound sections should be sold at the same price per pound, and let consumers take their choice. To me it seems wrong to ask more per pound for the one-pound section than for larger sizes. My observation is that the consumers are willing, in many cases, to pay as much per pound for a two-pound section as for the smaller sizes, and that it is economy for them to do so. Honey-producers are to blame for encouraging the present difference in price, and should tolerate it no longer.

As the foregoing relates entirely to my plan of supplying consumers with honey by producers, and through their home markets, I will now say a few words about distant markets and the large cities: These should and must be likewise supplied with honey, but none, *save the actual surplus*, after the home markets have been provided for, as herein indicated, should be sent to these markets. And this surplus should not, as in the past, be sent to the present class of commission houses, but to honey-houses owned, leased, or controlled by an association of honey-producers. Each honey-house should then supply the grocers, or retail agents, throughout the city of its location, in precisely the same way that the producer supplies his home markets, so that the system shall be uniform and harmonious everywhere.

The honey-house should be strictly a wholesale supply house, and should have, as its manager, a competent and financially responsible agent of a honey-producers' association. The honey-house should have travelling agents, and enough to supply properly the requisite number of responsible grocers, or retail agents, in the city of its location, every month in the year, and likewise one or more to visit other markets in the state, or territory tributary thereto, to see that none are neglected. This plan would perhaps do away with the necessity of having more than one wholesale supply house in any one state. It seems to me there should be such a honey-house in each of the following cities, to wit: San Francisco, Denver, Kansas City, Omaha, Minneapolis, St. Louis, Chicago, Detroit, Indianapolis, Cincinnati, New York, Philadelphia, and perhaps a few other large cities.

And now, says one, how are the managers of these supply houses to be paid? Simply by and through a proper commission on the honey sold by and through their retail agents. This would require two commissions in order to reach consumers.

But, says one, I thought you were opposed to commission men, and that you proposed to get rid of them altogether. By no means; for in order to carry out my programme successfully, commission men are necessary, and besides I have never advocated their destruction. All I have ever proposed or desired to do was simply to stop patronizing the *self*-appointed commission men who now sell our honey at wholesale, and who have had in the past, and still have at present, a great deal to do in fixing and manipulating the price of it.

My position is, that the producers are the proper parties to fix the price on honey to consumers,

and that this can be done through an intelligent committee appointed by the delegates of an association representing the honey-producers of the United States. This committee can and should agree upon a scale of prices for both white and dark honey in sections, and how the same should be graded, and these prices should and would be satisfactory not only to producers, but likewise to consumers.

The scale of prices thus agreed upon should then be printed in all of the bee-papers, and be kept standing therein until it becomes necessary for said committee to change the same; and all other so-called market reports, prepared by commission men or other parties, should be rigidly excluded not only from the reading, but likewise from the advertising pages.

The disposal and distribution of honey on the plan herein briefly outlined can be, and has been, adopted by *individual* producers, but by no means so successfully and harmoniously as by and through a protective and coöperative association of the *leading* honey-producers, and for that reason I am decidedly in favor of organizing as indicated, at the earliest practicable moment.

Having now made public some of my views upon this very important topic, I shall be pleased to listen to others by way of approval or otherwise.

St. Charles, Ill.

For the American Apiculturist.

THE CARR-STEWARTON HIVE.

JAMES HEDDON.

DEAR MR. ALLEY: In order to prevent the creation of what I believe to be an erroneous opinion, I wish to make a few remarks, and will take as a basis for those remarks, the article of "Amateur Expert," whoever that may be, which is to be found upon the first page of the November APICULTURIST. I read along in this article until I come to the last column, and there I find my name mentioned as also the following statement:

"And with the exception of the screws for compression, there is nothing new in the Heddon that is not to be found in the Carr-Stewarton:" the above referring to hives invented by the persons mentioned. All this seems to be aimed at invalidating my claims upon my late invention which is becoming so popular that jealousy and financial interests are aroused. Now, Mr. Editor, do you suppose as a fair outside judge, that any person who might believe that these Stewarton hives, as pictured in your journal, did really invalidate my claims, would use that hive? Of course they would not. No American would ever use that hive, and few beekeepers on the British Isles are using it. What do they wish to do? Do they wish to use my hive or some practical modification of it, and hold up the picture as an excuse? Isn't this the same old chestnut that was cracked before the public in Langstroth's time? At the time I invented my divisible brood-chamber, that is, a brood-chamber containing horizontally separable sections, I had never heard of the Stewarton hive; but afterwards, a gentleman having little knowledge of patent law, especially that relative to anticipation by foreign inventions, sent me a book containing cuts and full descriptions of the arrangements of this hive, writing me at the same time that although he felt sure I knew nothing of it he was still fearful that it destroyed a part of the value of my invention. I showed this letter and book to my patent lawyer, who is one of the foremost in the United States, and he

laughed outright at the idea of this invention, or the character of the invention, either one anticipating my American patent. This Carr-Stewarton hive never will be used by Americans nor any other nation of advanced beekeepers under any modifications that will not infringe my late invention. One of the important functions of my hive is produced through a combination of invertible and divisible brood-chambers. No matter how old either one of these might have been, the combinations for the production of the new functions is now patentable and patented. I do not claim a divisible brood-chamber unless used in a hive which contains two distinct departments, one for brood and one for surplus. Many of my friends have written me that I should say something upon this subject as it seemed to them that this "Amateur Expert" seems to be at all times aiming to belittle my invention. I never heard anything of, nor did I ever read anything concerning, a divisible brood-chamber; although, as you are well aware, the best apicultural brains of the world were pouring forth their thoughts, and these thoughts were printed and laid before us every month and week. It is hard to prove what has been done by some person somewhere, and very difficult to know what to believe regarding these statements; but the printed records cannot be destroyed and cannot be guilty of falsehood. I ask the reader to consider candidly which is more likely; First, that such valuable functions as are produced in my new hive, as admitted and claimed by many of our leading beekeepers, were well known before my book was published, and never written up? or, second, that the claims which *now* appear are falsehoods or mistakes: It might, no doubt, be true that some arrangements nearly like mine, but not enough like them to produce any valuable function, were known but of course, not given to the public because they died with their conception, and for no other reason than that they lacked practicability and usefulness. Please let me quote a few sections of patent law which I have before quoted in other places, and it seems to me are *prima facie* evidence of my statements above.

"Novelty of a thing is not negatived by any other thing fundamentally incapable of the functions of the first."

"Novelty and patentability are not negatived by the fact that every part of the thing is old."

"Novelty of anything is not negatived by another thing which was not designed nor used to perform the functions of the first." Everything favors the patentee on account of perjury. "Infringement or desire to infringe, is either or both, *prima facie* evidence of utility." "The state of the art to which an invention belongs at the time that invention was made, must be considered in construing any claim for that invention." And now, the following answers every pretence of anticipating inventions. "Patent law declares that the fact of abandonment and subsequent adoption of things claimed to be alike, are evidence sufficient to negative that claim."

If I err in regard to the intent of "Amateur Expert," I beg his pardon, and if I do not, I sincerely regret his ignorance of American patent laws.

Dowagiac, Mich., Dec. 5, 1887.

[In justice to Mr. Heddon the foregoing should have appeared in the API some time ago. Yet it has been crowded out by the great amount of copy sent us for publication.

We never doubted the fact that Mr. Heddon had a clean title to a patent on his hive. Yet we do not think patent claims should be discussed in any bee-paper. It was quite natural for Mr. Heddon to think "Amateur Expert's" article was an attack upon his hive; nevertheless, in our opinion it was not so intended.]

For the American Apiculturist.

ADVICE TO BEGINNERS.

JACOB DICKMAN.

ED. "API": That prize for the best essay on the Prevention of Increase may go to some one else, also the two other prizes, but when it comes to giving advice I'm in. Who can't give advice? My advice to beginners in beekeeping to about nine out of ten would be short; and after they have tried beekeeping three or four years, they will think it would have been exceedingly *good* for them had they taken it. 'Tis simply *don't* begin. Beekeeping is exceedingly fascinating to the most of us, and we are all apt to look only on the bright side, but there are so many drawbacks that come unlooked for, that ere we are aware, our enthusiasm is gone and when we meditate we find it was only our enthusiasm that kept us going; and we have a good stock of hives on hand which we were obliged to pay full price for, but which are entirely worthless unless we continue in the business. To those determined to try, we would say, after having obtained one stand of Italians (start with Italians) we shall be more sanguine of your success if you will not spend another cent for bees, but be sure to put a fence around the lot in which you intend to keep them, to keep animals out and also that little toddler whom your wife might for one moment forget, and don't be too stingy to subscribe for several good bee-papers and purchase some good standard works upon bee-culture. Then, choose the hive you wish, and I would recommend the Langstroth. As to hives, if all neighborhoods are like mine, one can buy good hives of those who have lost their enthusiasm and their bees, for less than half price, thereby keeping his expenses as low as possible. By all means run nine out of ten of your stands for extracted honey. You will have seen ere this that there are needed a smoker, bee veil, honey extractor, honey knife, etc.

We have had in our mind those only who have other occupations to obtain a livelihood. To those intending to make it their exclusive business, first, I say don't, don't. If you will, in spite of this advice, you better give one summer's work in the apiary of some experienced beekeeper, and board yourself, in order to gain experience in the business.

Defiance, O.

For the American Apiculturist.

QUEEN-EXCLUDERS AND SLOTTED DIVIDERS.

English beekeepers have discarded the use of zinc queen-excluders, not only because they were a hindrance to the workers, as Dr. Tinker says on page 65 of March API, but also for the more important reason that they never keep the queen from entering and laying in the supers if she has made up her mind to do so.

I have yet to see the ordinary queen-excluder zinc that will keep out a queen fully bent on going through unless she, like Barnum's late elephant 'Jumbo', happens to be extra large. Queens are mostly like ladies:

> "If they will, they will
> You may depend on it.
> If they won't, they won't,
> And there's an end of it."

And although they may not be able to walk boldly through the perforations yet they have a very cute way of 'sidling' through when quietly walking about at leisure and not worried by fear which seems to unnerve them as it does the 'lords of creation' sometime. You must not infer that we get eggs laid in a large percentage of our sections, as

that is not the case. We do not average above one or two per cent, and as to pollen I never have any stored in sections; it never troubled me, nor did I ever hear a complaint from that score from any of my friends on this side.

We prevent the queen entering sections by giving her no desire to do so. We use only young queens, give them some new comb each year in the brood-nest (they do like a piece of new comb to lay in) we super before more than half the brood-nest is filled with honey and always give room gently, but in advance of the storing requirements of the bees. If they have sufficient room in the brood-nest, they will not want to extend the brood-nest into what nature has taught them to make their store cupboard. Then, again, old queens

delight in breeding drones and will wander up in search of drone comb; young queens do not breed drones so freely. I will tell you a tale. A young beekeeper whom I know very well, who not only kept bees for profit and amusement in his garden, but also kept them with his pen for the mental benefit of his brethren, called in an expert in early fruit-blossom season to show him his case of sections "all built out and sealed perfect without any "pop-holes"around the side; in fact, ready to take off." "He should enter it for a prize medal." "Is it not perfection?" "Yes!" replied the expert, "It is the most perfect sample of *drone brood* I ever beheld." The whole case of twenty-one sections had been built out, laid in and sealed very rapidly in most beautiful order. The stock was a strong one, fruit blossom very plentiful, but *his queen was old.*

The same rule applies to swarming. We work on the non-swarming system in England. Young queens, with plenty of room given them, are not disposed to swarm; we use such, wear them out in two seasons and often do not get a swarm in two or three years. There are exceptions, as some strains are naturally predisposed to swarming. Don't breed from such!

Here is a cut of a new divider. The slots must be an advantage to the bees as they give greater facilities for passing from one row of sections to another and consequently saves the bees' time. Mr. Blow of Welwy Herts turned out some thousands last year. They are punched in both zinc and wood very rapidly by a machine fed by a small boy. Most prefer the zinc as they are more durable. A similar idea has been illustrated in "*Gleanings*" but I had not seen the idea before it occurred to me, which it did as "a flash of light." It is the old story of one idea entering two minds. It has not been taken up on your side, and yet John Bull is old, fat and slow and scarce knows a good thing when he sees it.

Don't we? Well, more of us are taking to read the Api any way.

AMATEUR EXPERT.

England, March 14, 1888.

A QUERY.

Has any one yet succeeded in rearing a strain of bees that, taken as a whole, are worthy to succeed and take the place of the Italians? A. R. T.

WAX SECRETIONS.

Bristolville, Ohio.

Are wax secretions voluntary or involuntary on the part of the bee?

G. S. BARB.

ANSWER BY PROF. A. J. COOK.

All beekeepers know the origin of wax. It is secreted by thin membranaceous glands just beneath the ventral segments of the abdomen. These glands take elements from the blood and form the liquid wax; which, by osmosis, passes through the eight wax plates and is molded as thin scales on the outside of these plates.

In most all cases secretion is wholly involuntary. From analogy then we should suppose it would be in this case. The cow has no control over the milk secreted in the milk glands as to time of secretion, quantity or quality. No more have we as to whether our salivary glands shall secrete spittle or not, or whether our liver shall form bile, or our pancreas its peculiar liquid. In case of bees then the burden of proof rests with him who believes that the wax glands of bees are under the control of the will.

Some years since, when foundation first came into use, I felt that this was an important question and I attempted its solution as follows: I hived three good prime swarms; one on empty frames, one on foundation and one on empty combs, and then weighed each, each day, after the bees had collected in the hives for the night. I found that the colony without either comb or foundation gained in honey much more slowly than either of the other two, and that far less bees flew. The other two colonies increased nearly the same, but the gain was slightly in favor of the colony with combs. Since then, I have had my students try the same experiment, with similar results; except, in one or two cases, the colony on foundation has done the best.

Now one of two things must be true: Either the bees have control of this function, or else, by their action, whether of rest or motion, they indirectly control secretion. The horse that works very hard raises a poor colt, because she cannot do so much muscular work and secrete enough milk for her offspring. I wish to fat my fine shorthorns for the shambles at Christmas time. I shut them up in a warm, comfortable, quiet stable, and give them no exercise. If they have to eat to supply muscular force they can furnish less for fat. Now, it would seem that this might explain the fact given above. When combs are to be built the bees hang quietly from the top of the hive, eat much; and, as no muscular force is to be expended, much wax is formed. When the mare works hard, she forms little fat or milk. When quiet she may produce much of both. Likewise the bee; only the condition of the hive is what induces the action or quiet.

But there is one more tangle to this knot: when bees are hived in an empty hive, we find that even the field bees are secreting wax. Nearly every bee will show the scales. On the other hand, put a swarm into a hive full of empty combs, and it is difficult to find a bee within or without with the wax scales in the wax pockets. I have repeatedly noticed this in looking for bees with the wax scales to show my class. Here it must be voluntary, unless the bees do less outside work in the one case, and so use vital energy to produce wax, and more in the other, and so do not have any vital force remaining to secrete wax.

Agricultural College, Mich.

HOW TO KNOW WHEN BEES ARE GATHERING HONEY.

Constantia, N. Y.

Can a person know when bees are gathering plenty of honey, or when they are not?

MRS. W. O. C.

ANSWER BY G. W. DEMAREE.

To say the least, this is a pleasing question. Nothing pleases the apiarist better than to be assured that his bees are gathering in the precious nectar with the greatest rapidity. How may we know this? If our hives were not so constructed that we could satisfy our curiosity by examining the combs and seeing with our own eyes the rapidly-filled cells and the gilt edged combs fringed with virgin-white wax, a sure sign of the inflowing honey, we should be left entirely to our best judgment and untiring observation when we are called on to answer the question "are bees gathering honey rapidly to-day?"

Let me illustrate here. Last fall after the long weary drought, we had some light showers and the nights became more pleasant. This started the fall bloom and the bees began to gather some honey. One day a friend in the bee business, visited me while I was looking through my apiary, and after some compliments said: "Are the bees gathering any honey of consequence to-day?" I answered, yes. Well, said he, "I hardly see how it can be, there are very few flowers yet." "Few flowers or not," I went on to say, "don't you see how those bees strike the alighting board short of the entrance and drag their bodies as they glide into the hive? They fairly glisten with their well-filled sacs. Some of them fall short of the mark and drop on the ground. This proves that they are heavily loaded. Now stand at the ends of the rows of the hives and look steadily down between the rows and you will see the bees as they leave the hives shoot out through the circling throng of returning bees, like beans shot from an old musket." "Yes." "Well, bees never leave their hives in that way unless they are gathering honey rapidly or carrying on a system of robbery somewhere." "Well," said my friend, "that is very feasible, but let us open some hives and see what they are doing." So we opened hive after hive and found the freshly gathered nectar in abundance.

By close observation and long experience we may learn to know at a glance when bees are short of stores, or when they are queenless, or when they are gathering honey. This sort of knowledge saves the apiarist a great deal of manual labor and many times saves his property. Let me suggest here that nearly all of us look at things in a *too general* way. We must fix our attention on the things we wish to learn and probe them to the bottom. In no other way can we reasonably hope to become *experts* in any calling or in any practice. Right along this line we find pleasure in bee culture. It is a deep and fascinating study, and lifts the bee student high above the *general* thinkers in particularities.

Christiansburg, Ky.

FEEDING TO STIMULATE DRONE REARING.

How early (in southeastern part of New York) can I with safety, commence the stimulative feeding of colonies selected for building a few early queen cells, and rearing pure drones before it will be possible for the drones of colonies not so fed to appear, so that all queens will be purely mated with selected drones before inferior drones begin to fly? L.

ANSWER BY J. E. POND.

I confess I am unable to answer this query as fully as I could if I knew the exact conditions of the case, such as temperature, etc., but I apprehend it will be impossible for any one to give a positive rule by which it may be governed, as

seasons differ so much, that the state of things existing during any past season would not be a safe guide on which to predicate the future. A general rule, however, might be given but would only apply in the case where the apiary is so isolated from other bees that there is no chance for mismating from them, and would be of little use for the reason that such a state of things can hardly be found.

By the use of "Alley's queen-and-drone trap" I think the whole matter can be safely and satisfactorily managed, and certainly with less trouble than in any other manner. By the use of this little necessity, complete and perfect control can be had over the whole matter, as only those drones are allowed to fly that are desired for mating purposes. In my use of the traps I have found them to answer the purpose, and have never found them a detriment to the works of the foragers. I, for one, do not take much stock in stimulative feeding. If there is ample feed in the hive, it is not needed; and, if there is a lack of stores, this lack should be supplied by feeding daily in sufficient quantity for the wants of the colony. Retain all the heat possible, and if the colony needs stimulating, add frames of brood from other colonies, and by this means the best possible results will be obtained.

No. Attleboro, Mass.

Several copies of the *Beekeepers' Magazine* have come to us of late. We are glad to note the improved change in that old bee-paper. It is really a good publication.

We notice that the most successful in beekeeping are those who read the bee-papers. There is no better way to keep posted and up in the line of the great improvements made each year in our favorite calling.

REVERSING.

Brookline, N. H.

MR. ALLEY: Please answer the following questions through the API, or in any way you choose:

1. What is the object in reversing?
2. Will reversing prevent swarming?
3. Will reversing the brood-nest three days after the issue of a swarm remove the necessity of cutting out the queen cells when introducing a queen by the three-day method? Will the queen be accepted and will the colony be more likely to swarm if the cells are not cut out?

READER.

ANSWER BY H. ALLEY.

[1. It was claimed that by reversing the frames at the proper time the bees would remove the honey stored in the brood-combs to the sections above, the change to be made just before the close of the honey season. Experience has proved that such claims were premature, and also that there is no great advantage in reversing the combs for such a purpose. Nevertheless, we believe in reversible hives and find it a great advantage to reverse the brood-nest in order to have the combs fastened on all sides of the frame. Bees will not build the combs down within about half an inch of the bottom-bar. Now, if this space is filled, it is plain to any one that there will be many more cells in the brood-chamber that will be utilized either for brood or for storing honey. This item is no small affair when there are eight frames 17 inches long, used in a hive. The brood capacity, by reversing, would be increased 136 cubic inches, and as there are 52 cells to a square inch, you will see that the difference between having the frames filled solid with comb or left as the bees naturally leave them is 7,072 cells for 8 frames.

When the frames are filled with comb and fastened on all sides, as they are sure to be if reversed, they may be handled with much less danger of breaking. This is a great advantage when the apiary is run for extracted honey.

2. Yes. Reversing will prevent swarming if properly conducted. The entire brood-chamber should be reversed as often as once each four days to break up the swarming fever, or rather in order to destroy the queen cells. A queen cell is capped on the fourth day after the bees commence to construct it, or after the egg hatches. In order to prevent a swarm from coming off, the combs should be reversed before the queen cell is capped, or a swarm would issue. I have practised reversing at the time a swarm issued and had good success. As soon as the bees had left the hive, and while they were on the wing the brood-chamber was reversed. When the bees came back, they really supposed they had entered a new hive, as all appears so strange to them by the combs being turned bottom up.

The queen was released from the trap and went in with the bees. The queen cells were soon torn down, as the reversing process destroyed the embryo queens and then the bees, of course, removed the cells.

3. I hardly think it would do to reverse the brood-nest three days after a swarm issues and introduce a queen. Some one of the cells might hatch and should a queen emerge the one introduced would be killed or the colony swarm. The proper way to introduce a queen by any method is to do so before any queen cells are capped. The three-day method which I have practised so many years with such good results is founded on this principle: It is generally from twelve to twenty-four hours before the queen is missed from a large colony of bees after she is removed. Now, I introduce a queen in three days or seventy-two hours from the time the colony is made queenless. The bees do not have time to construct and cap a queen cell in that time, and if a new queen is introduced before the cells are capped, she is at once accepted. As soon as her presence is discovered, the bees cease to work upon the queen cells. The new queen makes a visit to each one and destroys the larva; in less than forty-eight hours, all traces of the new queen cells have been removed.

It strikes me that any one can introduce a queen by this process provided the principle is understood.

WHO CAN ANSWER?

West Fallbrook, Cal.

Can a pure Italian queen always be distinguished from one with a mixture of Cyprian or Holy Land blood? If so, how?

B. J. RICE.

[It would be rather difficult to tell a *pure* Italians queen from one that has been crossed with any of the yellow races. Yet it is an easy matter for an expert to distinguish the worker bees of an Italian queen mated to a Cyprian or Holy Land drone by their markings. As American beekeepers are now done with the Cyprian and Holy Land races this question is of little importance].

BEST USE OF OLD COMBS—GETTING BEES TO WORK IN THE SECTIONS.

Constantia, Ohio.

1. Having lost a colony of bees from starvation, what will be the best use to make of the combs?

(The combs were diagonally across the frames. Our hives are the American.)

2. How can we get the bees to put some honey in pound sections for us?

MRS. W. O. C.

ANSWER BY W. M. BARNUM.

1. Trim the "diagonal combs" and press them into the frames, according to the directions given on page 295 of the API, for last year.

Then put them away until about

the middle of May, and let the bees "finish up the job."

The combs would be excellent to give to new swarms so as to start them right to work.

There are numerous places where such combs can be used to advantage. In fact, they are almost worth their weight in gold to the beekeeper who judiciously uses them.

Take good care of each one.

2. A good prolific queen is the best requisite to success in this case.

A colony that is just boiling over with young workers will seldom give any trouble in this direction.

A few partly-filled sections given to these idle colonies in the spring will sometimes start them to work.

For this reason I always save all my partly-filled sections in the fall.

Angelica, N. Y.

MUST THE EXTRACTOR GO?

Gonzales, Cal., Mar. 31.

FRIEND ALLEY:

The following I clip from the *San Francisco Call*, which paper copied it from the *San Bernardino Times*. While I do not fully concur with the views there expressed, yet I am inclined to think the writer correct in the main. And as it rather agrees with the views you lately expressed editorially I send you the piece thinking it may find space in the API. Yours truly,

A. NORTON.

NO MORE EXTRACTED HONEY.

BEEMEN DECIDE TO REPLACE IT BY COMB HONEY.

The fact cannot be denied that the beekeepers of California have for several years past been having a pretty hard time of it. We have seen prices go down gradually, year after year, until now they are so low that there is absolutely no profit in the business, at least so far as the production of the extracted article is concerned. And the decline in prices has seemed to have very little reference to the amount produced. Naturally, one would suppose, that in seasons of short crops, prices would become correspondingly stimulated. But such has not been the case. The price has gradually fallen until two or three cents a pound is about the limit of the price received by the producer, and one does not need to know that at such absurdly low prices there is no profit for the beekeeper. There seems to be some insuperable objection among the majority of people against the use of extracted honey. When that article was first put upon the market it was thought possible, and even probable, that its use might become general, and that so pure and healthful an article would quickly take the place of the impure and adulterated molasses, syrups and "drips," which are so largely consumed. Especially was it thought that this would be done when the price for the pure honey was put at a lower figure than those articles could be sold for. But for some reason it has proven all but hopeless to attempt to persuade people generally to become consumers of honey. As a consequence the price has, as already stated, reached a very low point, both here and in the east, though it was much longer in getting down there than on the Pacific coast. Now, beekeepers all over the country are seeking some method by which to make their business profitable. Many of the most experienced beekeepers of the east have decided that there is nothing to be done except to put a stop to the production of extracted honey and devote their entire time to the comb. It is now claimed to have been a great mistake to put the extracted honey at so low a price compared with the comb; but the damage has been done, and it was based upon the idea that the bees could make about three pounds of extracted honey to one pound of comb honey, and that therefore the relative prices should be about in the same proportion. But this does not work very well in practice, for while extracted honey at three cents a pound, no matter in how great quantity it is produced, does not yield a a profit, comb honey at eight to ten cents pays very well indeed. As a consequence the advice to stop the production of the extracted article seems to be well founded. It is certainly far better to produce two tons of comb honey that will give a profit of two cents a pound than to produce six tons of the extracted that has to be sold at a loss.

[It is evident that so far as the beekeepers of California are concerned the extractor "*must go.*" There is no doubt that the opinion and suggestions we expressed in the API about a year ago, will be adopted by the prominent beekeepers of this country. Sooner or later the extractor must go.]

NOTES FROM THE BAY STATE APIARY.

HENRY ALLEY.

PERFORATED METAL.

PERFORATED zinc is coming into such general use in the apiary I think that a description of the different kinds manufactured will interest the readers of the API. The first year that I kept bees I saw the need of some sort of a device for destroying a large number of the drones reared in the apiary. I at once devised a trap that worked very well and one that did the work effectively, yet it was not such an arrangement as could be applied to any style of hive in use, and so I used it in my own apiary and offered none for sale until perforated zinc was brought to my notice. Then I saw at once that a drone-and-queen trap and a thoroughly practical one, too, could be arranged that might be used at the entrance of any style hive and I soon devised one.

The first perforated metal I ever saw came from England, and is illustrated in fig. 1. The cut represents the exact size of the perforations.

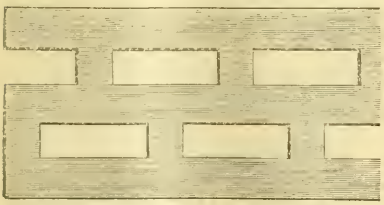


Fig. 1. Neighbor's perforated metal.

This metal was the best that I ever used or saw until Dr. G. L. Tinker sent me a specimen of that manufactured by him on a machine of his own construction.

The second variety of perforated metal and illustrated in fig. 2, came from the factory of A. I. Root, though it was not manufactured by him. The perforations in this sample are a little too small for the easy passage of a bee through them. Had the perforations been as large as those shown in fig. 1, it would have been all that we desired or needed, therefore this metal had to be discarded.

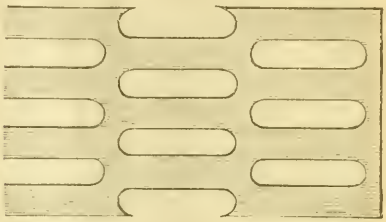


Fig. 2. Root's perforated zinc.

Mr. Root now manufactures perforated metal similar to that shown in fig. 1. It can be purchased of him at a very low price and will do very well for queen-excluding honey-boards, but the perforations are not as perfect as they should be to use in the drone-and-queen traps. I see no reason why A. I. Root cannot perfect a machine that will do as nice work as Doctor Tinker's will.

The next perforated metal I tested came from Chicago, and is like that shown in fig. 1, and was in every way as good as the imported metal; until, 1887, when the great demand for such goods seemed to make the manufacturers careless, and on account of the imperfections of the perforations I had to discard its use.

Well, now we have the "Falconer" brand of perforated metal which is perfection, except in one point. There are not as many perforations, by two rows, as there should be in a piece of metal two inches wide by ten inches long. Yet this metal is the best I can find that can be purchased at a reasonable price. The "Falcone." metal is the same as described and

illustrated in fig. 1, and I commend it for general use in the apiary.

Now we come, perhaps, to the best metal used or manufactured by any one. This is the famous Doctor Tinker brand. You will notice in the illustration, fig. 3, that the perforations are much longer than those in any of the kinds above described, and no one will fail to notice also that the division between each of the two rows of perforation is only half as wide as in the other kinds used. I need not describe to any one the great advantage this metal has over all the other kinds mentioned here. Doctor Tinker devised this style of metal to use in his zinc honey-boards.

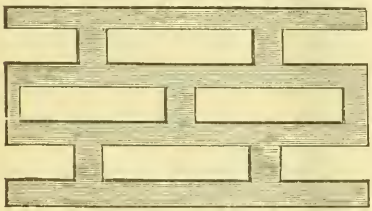


Fig. 3. Tinker's brand perforated zinc.

The only drawback to this metal coming into general use is the price. In order to get it one must pay double that is charged for other kinds manufactured. While this is really worth ten cents per foot, there are other kinds I would not use if given to me.

Well, the supply of new brands still holds out. Fig. 4 illustrates another brand of metal not yet on the market for sale. This is made on a foot-power perforator by John S. Reese of Winchester, Ky. I have a sample of it and it is fine.

I am in doubt as to whether this is or is not superior to the Doctor Tinker make. The narrow lines which divide the perforations may be *too* narrow. I think Doctor Tinker has drawn them down about as much as they should be. Should the division lines get bent or in any way out of line, a queen or drone could pass out, and the narrower the division-lines the more danger there is of the zinc getting bent. Those who use perforated zinc should be careful to keep the metal perfectly flat, and before using examine it closely.

I have a most favorable opinion of the Reese metal, but unfortunately none of it is for sale, as there is no means devised for making it in large quantities, though Mr. A. I. Root may do so later.

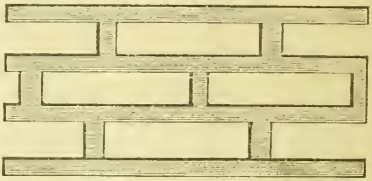
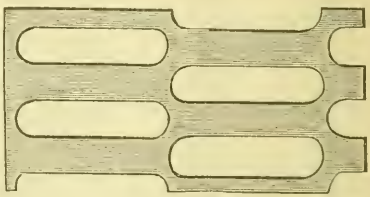


Fig. 4. Reese's brand of perforated zinc.

Finally, we have come to the last variety of metal we shall now describe. In a recent article in the API, I spoke of a kind of perforated metal that has perforations sufficiently large to let the bees and queens pass, yet no drone could get through it. Fig. 5 illustrates this kind. I do not know where this specimen came from, but should this description meet



the eye of the one who sent it to me I will be glad to hear from him, as I am in want of more of the same metal. I am, however, of the opinion that it came from E. L. Goold & Co., Brantford, Ont., where this metal is used. According to the description given in the April, 1888, issue, on page

88, of the API, any queen in the apiary can be fertilized by any drones desired. Of this matter, I will speak further later in the season.

[Since the foregoing was written we have received several more samples of metal from Dr. Tinker. They are the same as the Reese metal, and if Dr. Tinker has not reached the top round in the ladder of perfection no other person is likely to. If the readers desire to use perforated zinc honey-boards as Dr. Tinker does, by all means get the Tinker brand of perforated metal. When you see a sample of the metal you will be likely to say that we have not "slopped over" in our opinion of this metal."]

FOREIGN.

Appreciation.—The quotation, given below, is from the *British Bee Journal* of March 22, 1888. We are glad to note the fact that the API and its able contributors are appreciated to such an extent.

PRACTICAL HINTS FROM COUSIN JONATHAN.

Amongst American bee-papers, for practical information the *American Apiculturist* bears the palm. At intervals of a few months an extra-good number comes from the desk of Mr. Henry Alley. The number for March is so exceptionally good that I have condensed the following hints from it—which is always a difficult matter—and do justice to the writers at the same time. Several other subjects were treated, but I have used what I thought would be of most interest to readers of the —*Amateur Expert in B. B. J.*

ARTIFICIAL FECUNDATION.

As a skilful beekeeper here in Denmark (Mr. P. O. Berg, Torring) has in the last two seasons tried some very interesting experiments in this direction, I shall relate these to you, as they may, perhaps, lead to some very important discoveries on this head. Mr. Berg's experiments were made at the same time as Professor MacLain's in North America, but without his knowing the latter, and the former are in several respects better arranged.

Mr. Berg has not caught his drones among the multitude of drones in a strong stock (as did MacLain), but *at the entrance of the hive*, at the moment when the drone intended to take a wedding flight. This accounts for MacLain's complaint that most of his drones were not fit for the purpose, while with Berg every one of his was suitable for fecundation. He seizes the maiden queen by her wings with the thumb and forefinger of the left hand. In this situation the queen will bend her abdomen downwards towards the thorax. Then he seizes with the right hand thumb and forefinger the drone on both sides of thorax, and cautiously pressing the abdomen, the desired effect is produced, and fecundation may be accomplished. Mr. Berg tells us that the queen when released will disengage herself in some fifteen minutes. He has in this manner artificially fecundated six queens in the season 1886, and four in the last season, and in all ten cases with an excellent result.

As these very remarkable experiments, *if they are confirmed*, undoubtedly will lead to very important progress in apiculture—that is, to an easier and more sure fecundation of the queens—I hope that you are willing to acquaint your readers with them through your valuable *Journal*.—HANS ERSLEV, *Editor of the Danish Bee Journal.—British Bee Journal.*

[Experiments similar to the above were conducted in our apiary more than twenty years ago, but with no satisfactory results].

DRONE TRAPS.

Under the head of "A Review of the Bee Literature of Germany and Austria," we find the following:

"Drone-traps are described as dangerous appliances which should not be used in the apiary on any account, as they frequently cause the loss of the queen."

Well, isn't that rich? Where one queen would be lost by using the trap one hundred queens would be saved. Wonder what sort of drone-traps those fellows use?

We use traps here in America, because they save not only *all* the queens, but all the bees as well.

LIKES THE API BEST.

Canajoharie, N. Y.

EDITOR API: Last year I took 2,200 lbs. of honey from five colonies of bees. How was that for a poor season?

I like the "Api" better than any other bee-journal I take.

J. S. ELLITHROP.

The American Apiculturist.

Published Monthly.

HENRY ALLEY,
MANAGER,
WENHAM, MASS.

TERMS: 75 CTS. PER YEAR.

Wenham, Mass., May 1, 1888.

THE MANAGER'S CORNER.

To keep a promise made to the readers of the API we must tell them about D. A. Jones' new invention. It turns out about as we predicted it would. It is nothing more than a reversible section case. If D. A. Jones will come this side of the line that divides the United States and Canada, he will soon discover that lots of enterprising Yankees have invented equally as good reversible section-cases as he has just described in the "C. B. J." Bro. Jones claims some twelve points for his new invention. All of them were long ago met by beekeepers of the States. Bro. Jones has not, we believe, distinguished himself as an inventor of any practical and useful device of the apiary. Try again, brother.

Our friends who reside in Clearfield Co., Pa., can obtain any of the supplies we deal in of G. W. Fetzer, Clearfield, P. O., Pa. Please give him a call.

We want agents in every county in the United States to sell the drone-and-queen trap and other supplies manufactured at the Bay State Apiary.

ANNOUNCEMENT.

The form of the API will be changed with our next issue. We have consulted the printer and find that twenty per cent of the cost of printing our journal can be saved. The paper now contains thirty-six pages, including the cover. By using smaller type and making the columns a little wider all the matter now spread over thirty-six pages can be crowded into about twenty pages. While there will be quite a saving to us, our readers will lose nothing, as we shall issue a supplement, occasionally, containing important matter. A four-page supplement will be sent out with each issue, for a while, containing mostly advertisements.

We are so enthusiastic over the winter strain of pure Italian bees in our apiary we must be excused for speaking about them again in the API. We mean just what we say when speaking of this wonderful strain of Italians. We have no doubt that these bees would endure a confinement of five months and not suffer in the least thereby. These colonies have been on the summer stands all winter, and at no time could half a dozen dead bees be found about the entrance or on the bottom-board. They do not seem to care about a flight in winter, nor appear to suffer in the least, after being confined several months. They remain perfectly quiet all winter. There never was any indication of dysentery or the disease called shaking palsy or other disease about these bees. A more hardy, gentle and industrious strain of pure Italians cannot be found in the country.

If the reader of this is troubled about his bees dying in the winter he should purchase one of our queens.

We shall produce in the Bay State queen-rearing apiaries 2,000 young queens of this strain the coming season and shall do all the work required to rear the above number of queens ourselves, as well as to attend to putting up and shipping them. We employ no one to help us in this work. For prices, see the advertising columns of the API.

Our friend Demaree reports that he has been sick several weeks, but is now much better.

Mr. A. E. Manum is also on the sick list, but hopes soon to be in his usual good health.

Concerning his bees, Mr. Manum says:

"My bees have wintered well so far. I have not as yet looked them all over, but I think my loss in wintering will not exceed three per cent; and, as far as I have heard from others in this county, I think all have wintered well, though we have had a severe winter. My bees did not have a good fly from Nov. to Mar. 26. Many of my hives were buried out of sight in the snow for two months.

Dr. A. B. Mason is "all gone" on a certain bee-paper. He says: "If any other bee-paper is worth $1.00, what is the —— —— worth?" Evidently the Doctor considers his opinions of bee-papers worth double that of any other person. If that well-known M.D. really desires an answer to his question he is advised to read the API regularly. When Dr. Mason will read *all* the bee-papers, he will then be in a position to judge of their comparative values. Read them, Doctor, *then* tell what *you* know about bee-literature.

The same inducement heretofore offered for old and new subscribers will hold good the present season, as follows: One select queen of our best winter strain and the API, one year, $1 50. We guarantee beauty, purity and other desirable qualities.

Several customers have ordered one of the Bay State Reversible hives in the flat. We cannot sell one hive in that way for less than three dollars, on account of the work and trouble to pack it. Then again, let me advise you not to order one hive sent by freight. The Bay State hive, complete, weighs but thirty-five pounds, and they can be shipped as cheaply by express as by freight. Those sent by freight must be packed more securely than by express, and when sent by the former way we must charge fifty cents for packing.

REVERSIBLE SECTION CASES.

We sold a large number of these cases in the season of 1887. Price, 75 cents each.

They are so arranged that the bees cannot soil the sections, and all may be reversed at one motion. Each case holds twenty-four one-pound sections and weigh, all complete, but five and three-fourths pounds. Thus the express charges will be low to any part of the country. They are easily arranged to fit any hive. Try one.

ORDERS FOR QUEENS.

We are now booking orders for queens of our new winter strain. This strain gives such perfect satisfaction that we shall rear no others. They winter perfectly on summer stands without loss.

ARTIFICIAL POLLEN.

Much is being said about giving "rye meal, wheat flour," etc., to bees as a substitute for natural pollen. Can any of the scientific or unscientific beekeepers show that it is of any advantage? Give us the proof, gentlemen.—*Bee Hive.*

Read the back copies of the *American Bee Journal* and you will get the desired information. Try and keep up with the times, brother.

THE BEEKEEPERS' UNION.

Lend a Helping Hand.—Mrs. N. Stanley, Adrian, Minn., on March 24, 1888, writes: I send one dollar to aid the beekeepers' "defence fund," and let me say to those beekeepers who weekly read the *Bee Journal* that aside from the principle, "Do unto others as ye would that they should do unto you," is it not our duty to cheer and aid a sinking brother? Let us rally around our standard, and do battle for our rights and a just cause. Could I send an arrow of remorse into the heart of that Mayor of Arkadelphia, you may be sure it would be quickly sent. I am only a beekeeper in a small way, and I do not expect ever to need the aid of the Union, nevertheless I cannot hear appeals for help, in vain.

Mr. E. Liston, of Virgil City, Mo., has this to say about the Arkadelphia case:

Brothers, awake! Send in your dollar and join the Union. We that are being carried along on "flowery beds of ease," do not know how soon some one filled with malice and prejudice will put us in trouble. Even if we pass through without trouble, for the honor of our pursuit and our brotherhood, we should pay our little mites to help Brother Clark to obtain his rights as an American citizen. Your dollar is a mere pittance to what Mr. Clark is suffering. And to the Manager of the "Union" I would say, run it through all the courts — give Mr. Clark justice as an American citizen, and assess the fraternity for the necessary funds. Brother beekeepers, think of this case and be liberal.—*American Bee Journal.*

LOST NO BEES IN WINTERING.

Walton, Ky.

My bees have wintered splendidly. Lost no colonies and but few bees. The colonies from your queens are my best.

L. JOHNSON.

PLANTING FOR HONEY.

That fellow who publishes a little green-covered bee-paper down in the Nutmeg State must feel kind of sore over the enterprise some bee journals have shown regarding the honey-plant business. He says:

"The 'honey-plant' seed business is a good scheme to reduce the surplus cash of over-credulous beekeepers."

This is a sad case of "sour grapes" or a sore head, and is a contemptible and mean insinuation at the best. We are glad to note one change in that fellow's paper, and that is, the nonsense with which his columns have been filled the past six months has been left out. He must have had a queer set of "subs," if they were pleased and satisfied with such an amount of nonsense.

From Beekeepers' Magazine.

OF INTEREST TO NEW ENGLANDERS.

Editor Beekeepers' Magazine, Barrytown, N. Y.

MY DEAR SIR:—It has been suggested that the next and ninth annual National Agricultural Convention be held in Boston. These conventions have heretofore been held in New York, Philadelphia, and the West, and have always been attended by representative agriculturists from all sections of the country. The coming one will be the greatest ever held. Should the farmers of the New England States and the people of Boston desire to have this convention held in Boston, and favor me with an expression of their desire in the matter, the utmost consideration will be given the suggestion, and I have no doubt the next convention would be called in Boston. Very respectfully,

F. K. MORELAND, *Secretary.*

57 *Broadway, N. Y., Dec.* 27, 1887.

The Beekeepers' Handy Book

HAS HAD AN EXTENSIVE SALE THE PAST FEW MONTHS.

It will tell you all about Queen-rearing and how to keep bees and make beekeeping pay.

300 Pages, Bound in cloth, by mail $1.10.

☞ SEE CLUB RATES (on another page).

AM. APICULTURIST,
Wenham, MASS.

GLEANINGS FROM CORRESPONDENCE.

HE FINISHED HIS DINNER.

Newburgh, Ind.

MR. ALLEY: If my brother beekeepers would pay more attention to your advice they would, I think, save much hard labor.

One day in July last, after much hard work in the beeyard, I went to dinner and after I had satisfied the inner man somewhat, yet before I was nearly through dinner, my little daughter calls, "Pa, the bees in hives number 19 and 31 are swarming." Well, said I, "never mind them, Mary, let them have their fun." "O, Pa, you won't let the bees go to Kentucky?" "Oh! no," I replied, "I will see and attend to them after dinner." "Oh! yes, I see Pa has put an Alley trap before the hives." "It is all right," was the reply of my good wife. I finished my dinner, smoked a cigar and after the weather was some cooler I attended to the two swarms.

Now, here, brother beekeepers, take my advice, procure the queen-traps, take your dinners in ease and do not get alarmed when the bees swarm. Send me one-half dozen traps.

Dr. GEO. LOCKE.

HE LIKES THE TRAP.

Cape May City, N. J.

MR. ALLEY: I have fourteen of your drone-and-queen traps in use and like them very much. When a swarm issues, I just quietly put a new hive in the place of the one the bees come out of, put the trap at the entrance, put the nail out so the queen can pass out into the new hive, and go about my business. The bees always come back, and what is more they stay.

The API improves very much.

G. W. BLAKE.

[Instead of drawing the nail to allow the queen to pass out, we have taken the slide out at top of trap. We confess that Mr. Blake's plan is much better, as the work can be done so much quicker and better.]

IT FILLS THE BILL

Myersville, Md.

FRIEND ALLEY: I have received the "eleven essays on Wintering Bees," also another copy of the API. They were the first of your publications I ever saw. I have seen quite a number of other bee journals, but the API fills the bill for me in every respect. Here is my name and one dollar for one year.

C. W. LUDY.

THE TRAP A GOOD THING.

Gorham, N. Y.

MR. ALLEY:

I like your journal very much and have got a good deal of information out of it. I have used your drone-and-queen traps and think them a good thing.

CHARLIE A. GREEN.

Leafield, Ind.

I have sixty-three colonies of bees in winter quarters; most all of them are packed in oats, straw and chaff on the summer stands and seem to be very quiet so far, with a few exceptions. Twenty-two colonies are buried in a clamp packed in chaff. The temperature inside has ranged from 32° to 42° most of the time. I have the largest apiary in this county.

A. WORTMAN.

BEES ALL RIGHT.

York, Pa.

MR. ALLEY: The bees seem to be all right so far. Have mine in cellar. I did not receive any surplus honey last season, but all my colonies went into winter quarters with from twenty to forty pounds of honey and in bees.

I received three queens from you last summer whose workers are *equal* if not *superior* to any in my yard, and I bought queens from the most prominent apiarists in the U. S.

M. W. STRICKLER.

A BOOMING SEASON.

Angelica, N. Y.

Bees appear to be coming through well.

Out of eleven colonies which I cautiously examined the other day, there was only one colony which I thought "doubtful," the trouble there being starvation; but I think I can "fetch" them through. The rest appeared to be wintering *perfectly*. All my bees are on their summer stands.

I anticipate a booming season, in bees, queens and honey-product.

I am much pleased with the March number, just received: it is indeed a *valuable number* both to the old beekeeper as well as to the "beginner." WILLIS M. BARNUM.

THE DRONE-AND-QUEEN TRAP A SUCCESS.

Champaign, Ill.

MR. ALLEY: The sixty drone-and-queen traps I purchased of you are a success in every sense of the word at swarming time.

L. DAWSON.

CONVENTION NOTICE.

The Keystone Beekeepers' Association will hold its sixth annual meeting in the Court House in Scranton, Pa., on Tuesday, May 8, 1888, at 10 o'clock A. M. All beekeepers are invited.

ARTHUR A. DAVIS, *Sec'y.*

Clark's Green, Lackawana Co., Pa.

HOW TO SELL HONEY.

TO LOVERS OF HONEY.

I am a producer of the celebrated Vermont honey, the finest honey in the world.

I prefer to sell my whole yield directly to the retailer or consumer, as thereby I can better establish a favorable reputation.

My honey is all made in one-pound combs and white poplar sections. These are packed in crates holding a dozen combs in each, with glass in the ends, and will ship, handle, and sell with no leakage or breakage.

My honey is all made from Clover and Linden, is pure white, combs are well filled and bear my stamp. I also have a fine grade of honey separated from the comb. This is in Mason fruit jars and tin cans holding from 1½ to 12 lbs.

JOHN H. LARRABEE.

Larrabee's Point, Vt.

AGENTS FOR THE DRONE-TRAP.

Our queen-and-drone traps can be purchased of the following parties:

Thomas G. Newman & Son, 925 West Madison St., Chicago, Ill.

W. T. Falconer, Jamestown, N. Y.

James Reynolds, 391 Main St., Poughkeepsie, N. Y.

E. R. Newcomb, Pleasant Valley, Dutchess Co., N. Y.

A. I. Root, Medina, Ohio.

J. D. Goodrich, East Hardwick, Vt.

C. W. Costellow, Waterboro, Maine.

G. M. Hambaugh, Spring, Brown Co., Ill.

Wm. H. Norton, Skowhegan, Maine.

Remittances.— Make money orders payable at the Salem, Mass. P. O. Cashiers' checks and American Express Money orders are safe ways to remit. Currency may be sent in Registered Letters. Odd change in small amounts may be sent in one and two-cent stamps.

FOR ADVERTISERS TO READ.

New Philadelphia, Ohio, Jan. 24, 1888.

FRIEND ALLEY:

I am overrun with correspondence and work. The only advertisement I am running is in the "AMERICAN APICULTURIST, and it sends me lots of work. I shall have to enlarge my works. The API is now one of our best bee journals and should have a steady increase in circulation.

DR. G. L. TINKER.

[Thanks Bro. T. for such kind words for the API, and its value as an advertising medium.]

The fact that we send out large numbers of sample copies of the "Api" to those who call for them by mail, makes our paper one of the best advertising mediums extant. When a person receives a sample copy of a publication he is apt to look it over, advertisements and all, while one who receives it regularly seldom looks at them.

Mr. W. T. Falconer, Chas. Muth & Son, Chas Dadant & Son, Professor Cook, Dr. Tinker, W. F. and John Barnes and several other parties find that it pays to keep a standing advertisement in the APICULTURIST. *It will pay you to do the same.*]

WORTH REMEMBERING.

1. Provide your apiary with all the necessary fixtures before the honey harvest begins.

2. Don't fail to try one of our Bay State Hives the coming season. You can get one, made of the best white pine lumber, painted and all complete, ready to put bees in, for $3 00. By the half dozen in the flat one made for model, $2.50 each.

3. Don't tolerate an old queen in the apiary. She may have been the best the previous season, and prove worthless this year. Send to the API and get one of our best winter strain pure Italians; they winter well on summer stands.

4. If you never have used one of the drone-and-queen traps, the present season will be a good time to test them. If they do not prove as good as we claim for them you can draw on us for $1.00.

5. If you want a good smoker send to us and get it. We keep Bingham & Hetherington's "Doctor," and the Alley-Quinby smoker. They are the best and cheapest in the world.

6. Do not forget that you can get the API one year for 75 cents, but we do not give a premium of a drone-and-queen trap at that price. Nevertheless, if you want a fine queen after paying 75 cents for the API, you can get her by remitting 75 cents more when the queen is needed.

7. Those who pay 75 cents for the API can get a copy of the Beekeepers' Handy Book for 75 cents additional.

8. If you *must* have two good monthly bee papers, we will send you the API and "*Beekeepers' Review*" for $1.00. No premiums.

One of our Bay State Reversible Hives complete, including the surplus arrangement, weighs but thirty-four pounds. When packed ready for winter the weight of all will not exceed forty pounds. Thus it will be seen that most anyone can lift such a hive with ease. Another point is the fact that when one of these hives is sent by express the charges will not amount to more than the cost of the hive.

TO ADVERTISERS.

We will accept of bees, sections or foundation in exchange for advertising space in the APICULTURIST.

The Quinby Smoker. — A description of the improvement made in this well-known smoker was given in the API some time ago. We now have a lot of smokers on hand. This smoker, as now made, works as well as any bellows-smoker on the market. The good points are these: If the fuel is dry, a smoke can be had in a minute's time by merely applying a lighted match to the "fire-hole" at the base of the barrel. Those who use the old style Quinby smoker are obliged to go to the stove for a coal of fire in order to ignite the punk.

DOUBLE-WALLED LANGSTROTH HIVES.

OUR old style Bay State hive is the same as the Reversible hive, except one has reversible frames and is adapted to the standard Langstroth frame. The latter has every good feature in its construction that the Reversible hive has, except reversing the combs.

It can be used with or without the outside case in summer; the sections can be tiered up the same, and the section case is exactly as near the brood as in the Reversible hive. We have used this style in the Bay State apiary fourteen years and with good results. The price is the same as for the complete Reversible hive.

EXPIRATION OF SUBSCRIPTIONS.

When your subscription expires a cross, thus, ×, will be made over this notice. The same is intended as a kind invitation for you to renew your subscription at once. If you need the journal and cannot spare the money we will continue it, if requested to do so.

THE AMERICAN APICULTURIST

A JOURNAL FOR THE NOVICE AND EXPERT.

Devoted to Best Races of Bees, Best Hives, Best Implements and Best Methods of Management to make Beekeeping a Success.

PUBLISHED MONTHLY. HENRY ALLEY, *Manager*.

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Correspondence.

Improvement of the Honey Market.

NUMBER ONE.

GEO. F. ROBBINS.

Best means for increasing the consumption of honey—Shipping on commission—Importance of home market—Best foundation and use.

A good honey market involves these two things, viz: A ready sale for our honey and remunerative prices. To improve our honey market means to obtain in a measure those two things. And to improve the market means vastly more to the honey producer than to the wheat grower or hog raiser. Bread and meat are standard living commodities; honey is not. The former may be regarded as necessities and always must be; the latter is not a necessity and never can be. How then to create a demand and secure living prices for honey may well be a matter of absorbing inquiry. Whether or not honey may ever become a staple is a much mooted question. Some contend that it can be; others that it must always remain chiefly a luxury. I hold to a mean between these two extremes. Honey, I believe, may become and is becoming largely a staple, but it will never be so much of a staple as syrup. It will always be more of a luxury than apples. However, be it as a staple or a luxury, how shall we increase the demand?

Best means for increasing the consumption of honey.

I have found it to be a fact, though a strange one to me, that there are far more who like syrup than who relish or can eat honey. Yet I have also learned that many will use it largely in place of syrup, if it can be procured at a price within their means. When there was a large crop in this region and I sold honey at 20 to 40 per cent lower than when it was scarcer I could sell considerably more. That crop, 1886, flooded Springfield, Ill., with honey, and prices tumbled, and it was the low prices that enabled it to sell. One of the most successful and reliable grocers of the city told me that when he retailed comb honey at 12½ cents, he sold it regularly to laboring men, who would not buy it, at least not so extensively, when the price was 15 cents. He said also that it cut into the syrup trade. These are pretty good indications as to how nearly honey may be made a staple. As for luxuries, that luxury which is cheapest is the luxury that people will purchase most. Hence to lower prices is one of the best means to increase consumption. Now this looks like tearing down instead of building up—like injuring rather than improving the honey market. But wait a little. I do not believe in slaughtering prices. I simply mean that to put prices down as far as possible to where honey can more nearly compete with other table commodities, is one of the best means to increase the consumption thereof. It is with honey as it with everything else the world over. The best article that can be procured the cheapest will be used the most. But here is another point that means something just now. It is only of late years that the honey trade has become a factor in commerce. Hence the low prices of 1886–7, and greater consumption, had the effect to create a taste and consequent demand for honey when higher in price. Still, I repeat, I object to *slaughtering* prices. There is no excuse for beekeepers rushing fine comb honey into market and actually offering it at about 10 cents per lb, as I have known some to do. That is unnecessary and consequently injurious. What I contend for is just this. We shall find it to our interest to study, not so much to keep prices at the highest possible point, as to produce at the lowest possible cost and sell at the smallest remunerative profit.

Having spent so much space on the above I can no more than indicate some other points and they are hardly new. The one idea is to keep it before the people. Raise a gilt edge article and put it on sale in a handy and attractive form. Do not pack your nice sections into a cracker

box and set it on the counter to be handled until it becomes broken, dauby and dusty. I have seen some sitting disconsolately in a store in Springfield for two months and I do not wonder at it, especially as the price is 25 or 30 cents. I furnish glassed retailing cases, and when one becomes empty I take it home and clean it up. Put your extracted honey in small packages. I find that it sells more readily in not larger than 2 lb. lots. Glass packages I believe to be the best as a rule. Strive to have the best quality of honey. This is most important. For example: A buys a section of beautiful, well-ripened clover honey. It is good. It tastes like more. He gets about two more boxes that look just as nice but are not ripened so well. Perhaps it has set too near to the wall or floor of the honey house. It is thinner and lacks the ravishing flavor of the other. He does not realize that there is any essential difference. He only knows that it does not taste as good to him and he concludes that he is growing tired of it and buys no more. See that your honey is good. Take it to folks' own doors.

Shipping on commission.

Generally shipping on commission is one of the best methods in the world of breaking down prices. It accumulates great stacks of honey at a few points, which has the effect to depress any produce market and certainly it must that of so precious and delicate an article as honey. It consigns the honey to men who cannot devote the attention to, nor take the interest in, the matter that the producer could or should take himself. No doubt the commission business is often an advantage to the beekeeper. After his own market is worked to the best, the commission man can often dispose of the surplus much better than he can himself. But the practice of lumping off a crop to a commission merchant or wholesaler can scarcely be too severely condemned. Take into account the profits of two, often three middlemen, transportation charges one way sometimes two, the honey, it may be going back, near to, or past where it started from, and other items before it reaches the consumer, and the proceeds to the producer are below all proportion to what they should be, even though the retail price be fair. If honey must be disposed of in this way it should be done through men who are themselves interested in honey production, such as Muth and others who might be named. But we should be on the lookout for any channel through which we may reach the retailer direct. I have sold honey through the medium of correspondence 400 miles away.

Importance of the home market.

The importance of a home market can not be easily overestimated. I like to talk on this point. It is one of my hobbies. The objections against the commission and lumping business all argue its importance. Having enumerated them I need not repeat them. It will take time and work to build up this market, and it may not seem to pay at first. I have found it so. But in a few years I have gathered a custom that takes a large share of my crop every year. I include in my *home market* Springfield, Ill., fourteen miles away. I have worked hard to do it, but now her merchants know me as a producer of nice honey, and they will often approach me, instead of waiting till I go to them. And I get as good prices from them as, or better than, I can ever get in Chicago, to say nothing about expenses. One of the best points about this system is that you are not dominated by the general market. Here Chicago prices determine those of hogs and cattle. But honey is quite independent of any such rule. I sold none of my extracted honey of the crop of 1886 at less than eight cents, plus the cost of the package. Had I shipped it I might have obtained five cents minus cost of package. By all means let us develop a home market. Let us begin with our next door neighbor, and cultivate our field outward as far as we can reach personally.

Best foundation and its use.

I see no necessary cause for alarm in the use of foundation in sections. Some think it gives encouragement to the "Willey lie." If we use for that purpose heavy dark foundation, so that there will be a strip of tough, thick, black wax at the top of the cake when it is cut out of the box, it may do so. But very thin foundation made out of the lightest, purest wax, running about 11 to 12 sq. ft. per lb., is, I think, pretty safe. Sell your honey yourself near home, and folks are not so apt to think it manufactured. The lightest foundation is a little tough it is true. But comb built in the heat of summer melts in one's mouth rather too freely anyway. Such foundation gives the honey a little more body, and its presence will hardly be noticed by one out of a thousand. The use of full sheets may make it less noticeable, yet I generally use only starters. One supply dealer recommends full sheets because they make the honey weigh heavier, but that is hardly honorable. I use Dadant's extra thin and fasten

in the section with a starter machine. Use no melted wax about it; use no dirty foundation; use no old, strong, black comb, as natural starters — nothing that will detract from the gilt edge qualities of your honey. Cheapness in such respects as those will prove very costly in the end.

Mechanicsburg, Ill.

NUMBER TWO.

JOHN A. BULL.

OF the many problems which at the present time are claiming the attention of the beekeeping world, there is (perhaps) not among them all a question of more vital importance to each of us individually, none more difficult of satisfactory solution, than the one involved in this issue of the APICULTURIST. Where shall I find a sure and permanent market for my honey crop at remunerative prices? is a query which must necessarily press itself home to every thoughtful person that is in any degree dependent upon the production and sale of honey for the maintenance of his family. Much has been written upon this subject of late by men that have had more experience than myself in this business, therefore it seems almost useless for me to offer any suggestions thereon; yet since we cannot all see things just alike, nor do things in the same way with equal success, it is very natural that we should adopt different methods to secure the same end.

However anxious we may feel to make the most we can out of our business, let us not forget the golden precept, "As ye would that men should do to you, do ye also to them likewise." We should look upon both sides of this marketing business, and then endeavor to pursue such a course as we would consider fair and right, if we were consumers, instead of producers. "Live and let live." If we "fix the price" too high, the sales will be limited, and we thereby defeat our own object. On the other hand, if we can offer our honey at such prices as will render it reasonable for the masses to buy and use it as an article of daily food, why, then the demand would be enormously increased; it would no longer be looked upon as a luxury, only to be enjoyed by the wealthy, but it would become a staple article in commerce and find ready sale at all times. And I believe that it is in this direction that we shall find an open door of relief for the honey market. In my mental ear I seem to hear some one say, now he is "giving away" the beekeepers' interests by advocating low prices for honey. I am not giving away the business, but desire to build it up by increasing the demand for honey. There is, perhaps, no one who would be better pleased than myself to get good prices for honey, providing such prices come spontaneously from the real value of the article, so that the purchaser will feel that he gets full value for his money and will continue to purchase.

Every beekeeper should be wide-awake to the fact that the home market is his best market, endeavor to develop it to its utmost extent and see that it is fully supplied with all the honey it will take before sending any away to distant markets. By selling at home we save the freight and commission man's fee and avoid the danger of breakage and loss. And besides this, if every one would work up a trade at home it would make a more even distribution of the crop, increase the consumption and demand for honey and at the same time relieve the large cities of the glut which now so frequently occurs. Therefore, stimulate the home market with the very best article put up in the most attractive style to make it look inviting, for some people seem to have just as keen a taste in their eyes as they have on their tongue. Strive to make honey fashionable in your locality, so that every housekeeper who does not have a card of nice honey on her table when her friends come in to take tea with her will feel that she is behind the times.

I have always sold nearly all of my honey within the town in which I live (although some of it has been bought by dealers to ship off). To put up comb honey for family use I make crates to hold twelve $4\frac{1}{4} \times 4\frac{1}{4}$ sections each, similar to the regular shipping crate, extra pains being taken to make them smooth and nice; and instead of nailing the cover to the crate I nail a thin moulding all around the edge of the cover in such a manner as to shut down over the top of the crate about half an inch, fitting closely to keep out flies, ants and all other insects; then give it two good coats of light green paint; after the paint is dry put the glass in the ends and it is ready for use. When these crates are filled with nice comb honey, the snowy whiteness of the combs as they are seen through the glass in the ends of the crates, appear in beautiful contrast with the color of the paint, and it looks very neat indeed; and often at first sight it calls forth the exclamation, "Oh, how nice!" And its inviting appearance is

often the only argument needed to sell the dozen sections. Every family which buys a dozen sections at one time receives one of those crates to keep them in until the honey is used up; the crate is my property and is not sold with the honey, but each family is furnished with one so long as they buy honey of me to keep in it, otherwise the crate is to be returned to me. These crates, if used carefully, will last a number of years and can be refilled as often as desired.

For the grocery trade I have a show-case about 20 inches square and 2 feet high, three sides of which are of large panes of glass. Underneath the glass part is a drawer in which can be placed a quantity of sections for convenience in supplying customers without opening into the upper part where all should be kept in neat, tasty order. This case, filled with comb honey, is kept standing in a conspicuous place upon the counter in one of the leading stores in the village of Seymour, so that every person who enters that store will be sure to see it; and there is no doubt but that this showcase has greatly facilitated the sale of honey in the town. I have recently made arrangements with another leading firm to put a similar case in their store also the coming season.

A new idea occurred to my mind the other day, viz., that it might be a good way to attract people's attention to the use of honey and the various purposes for which it is suitable, to offer special premiums for the best sample of fruit preserved in honey, and best articles of cookery in which honey is used. Articles to be exhibited and premiums awarded at our agricultural fair next fall. Premiums to be payable in honey.

Seymour, Wis.

NUMBER THREE.

JOHN H. LARRABEE.

IN the English language the word market is used to express that indefinable something about which the agricultural classes and all those distant from the great centres of trade know so little, and concerning the state of which the commission man is the self-appointed great omniscient.

There are "Bulls and Bears" in the honey-market as well as on Wall street, but, aside from their influence, the market is governed only by Supply *vs.* Demand coupled with the cost of production. If we take it as granted that the cost of production is as low with our present methods, as is consistent with good management, we have only to consider the factors of supply and demand; how to keep the supply below the demand or to raise the demand above the supply. From a business as well as a philanthropic standpoint it is, perhaps, not best to limit the supply. As soon as the price of honey becomes so low that it is produced at a loss, there will be room for the persistent.

But what a broad field opens for our consideration when we look at that word *demand*. On that word hinges the future condition of the market. Until every household has its honey-pitcher and every grocer its honey show-case, let us not cease in our endeavors to distribute our product.

I am enthusiast enough to believe that some time (you and I, reader, may never see it) but some time honey will be restored to its lost place upon the food tables of the world and drive out the health-destroying sugar of the present. Those who believe in evolution and those who have studied it learn that changes in functions and uses are slow, but the natural taste for honey in the human race is strong and will grow with use, just as the taste for tobacco, liquor or opium is acquired.

But let us look for a moment at the practical means which may be employed to accomplish this desired end. First to be accomplished is the even distribution of the crop over the country. There are villages, towns and even cities, I doubt not, whose markets and groceries are to-day and have been since last season barren of honey. This condition may have been caused by ignorance, on the part of the retailer, of the demand which could be created, or by his obstinacy in not buying and supplying the demand at advanced prices. The *producer* should see to it that every town is supplied. Even farmers will buy liberally if an opportunity is given.

See that the town or village nearest you is supplied all through the year, while there is a demand; then, with a fair sample of your crop and a knowledge of prices, take the cars for the nearest and most promising town or city. Be candid, upright and straightforward, uncompromising if need be, and success will await you. A few dollars can thus be spent with much more advantage than in paying big commissions to irresponsible or dishonest commission men. A neatly printed card or circular, setting forth the excellence of honey in general and yours in particular, and showing the demand which can be

created for it, may profitably be sent to the retailer whom you are about to visit. Urge upon him the necessity of making a tasty display of it when it arrives. Ask him how many of his customers would inquire for candy were it placed in boxes under the counter instead of in a neat glass showcase, and then make the necessary comparison. An attractive display under glass or a pyramid of fancy honey in paper boxes, surmounted with a glass jar of finest "richly-flavored, crystal" honey, should find plenty of buyers in nearly every grocery in the land.

The retailer always has been and we hope always will be a necessary adjunct to every community, but the middle man is not.

The system of peddling honey from house to house, although it may succeed with some men and in some locations, it seems to me is not practical for all years and all men. True, not all men will succeed with the method I have above outlined, but if one-half or one-fourth of the producers of honey would only try it, what a revolution in the honey markets would ensue. Those most successful would, like Mr. Baldridge of Illinois, continue to sell, and, by taking the crops of their friends, create another class of middle men with totally different aims and methods from those now employed by our softsoaping, flattering, cheating, skinning middle men.

Larrabee's Point, Vt.

NUMBER FOUR.

Z. T. Hawk.

It needs no elaborate arguments to prove that to the beekeeper the honey market is of the greatest importance. In fact, the uncertainty of the market is the one bar to the establishment of beekeeping as an independent pursuit. Honey is not a staple — it must be classed with the luxuries; and a heavy crop or hard times with those who are the usual customers invariably have a depressing influence on the market. When low prices are the result of an abundant crop, it is not often that the apiarist is the loser; but when a light crop and hard times go together, as in many localities during the last year, then may the producer of honey sigh for the time when his product shall be a staple article of food.

I regard the home market as of the utmost importance to the apiarist, but it is so susceptible to adverse influences that it must be nursed with the tenderest care. A few tubfuls of broken comb honey placed in the local markets with which I am best acquainted, at a low price, by a few unposted farmers will demoralize the sales for a year, and the finest comb in sections or extracted in attractive packages may go begging or else be sold at a loss. In such a case, I know of only one way for the heavy producer to protect himself. He must turn buyer himself, and in the meantime do all he can to enlighten the small producers as to the best method of placing their honey on the market and as to its value when once placed there.

That the attractiveness of the package has much to do with the price realized for honey cannot be doubted for a moment. Only this week some extracted honey was placed in the grocery stores of this town in Mason fruit-jars. On some of the jars written labels announce that the contents are "strained honey," and when one picks up a jar the honey on the outside at once glues his fingers fast. A few dusty days will very materially injure the sale as it ought. I have no doubt the honey is a fair article of extracted, but the producer's ignorance of the effect of that fatal word "strained," his carelessness in preparing his honey for sale, and his mistaken economy in not placing an attractive label on every jar certainly do not tend to improve the local market. I have had no experience in selling extracted honey, but I believe that what influences me as a customer influences many others; and I know that I have not the courage to buy dirty, dauby packages *at any price*. Of course the beekeeper will produce his honey in the shape most demanded by his market; but if he produces comb honey let it be in sections if he can possibly prevail upon his market to accept it in that form. But a section offered for sale with the propolis still adhering is an abomination. The wood should be white and clean, and that super is the best that permits the bees to store honey with the minimum of propolis and travel-stain on the outside of the sections. In this respect, I regard very favorably the Bay State section case as placed on the market by the editor of the Apiculturist, Dr. Tinker's new clamp-super and Mr. Heddon's new case. My preference is decidedly in favor of the four-piece white poplar section, bee-passages on all four sides. A showcase full of these sections nicely filled, all propolis removed and no honey dripping down, the combs are an irresistible attraction in any market. When a small retailing case is used, it should

show as much comb surface as possible and be made of clean, white lumber. With these conditions observed, the apiarist can dispose of a good deal of honey at a fair price in what might be considered by many a most unpromising market.

I have but little faith in combinations to control the price of honey. Time and an increased production will do much towards giving stability to the market, but at present beekeepers are so widely separated from each other and local conditions exert such a powerful influence on the price asked by producers that I consider all such combinations as those advocated so vigorously through the bee journals by many of our leading apiarists as visionary in the highest degree.

Audubon, Iowa.

NUMBER FIVE.

DR. C. C. MILLER.

JUST how to winter without loss, how to secure workers for the harvest, how to prevent increase, how to improve our stock and various other problems that arise, are studiously discussed and thought over, showing their great importance. If, however, such a state of affairs should suddenly come about that the only market quotation for honey would be "no sale," our deep interest in the subjects I have mentioned would, I am afraid, diminish very rapidly. On the other hand, if old prices should return and honey should be in brisk demand at double present prices, how our interest would awaken as to everything connected with bee-culture. So the matter of selling honey is evidently not one of secondary importance. There is little chance to say anything new about it and its supreme importance is perhaps the only excuse for saying *anything* about it.

It is all very well to talk about honey being a natural sweet and so much healthier than the bedrugged and bedoctored stuff thrown upon the market in the shape of syrup, sugar drips, etc., and perhaps we ought to say more than we do, but after all it does not seem to make much impression on the public mind. They go right on buying the bad stuff, and letting the honey severely alone. Why? perhaps habit has something to do with it. Price surely ought to, and also quality; and yet, somehow, dropping the price does not seem to create a proportionate demand. If a merchant sell 1000 pounds in a given time at a given price, would he sell double the quantity at half the price? Perhaps, and perhaps not. Undoubtedly, however, price has something to do with it. As to quality we may be surprised to find how many there are who say they prefer the syrups of commerce, poisoned though they may be, to honey. There is "no disputing about tastes," but is it a matter entirely beyond our control? Whether honey be in the comb or extracted, you know very well that there is a vast difference in the quality of different lots. One sample is rich, oily, leaving no unpleasant after taste. Another has a sharp, sour twang, and one is hardly culpable for considering it inferior to a pure sweet from cane sugar, flavorless though it be. I am not now talking about honey from different sources but about the difference of honey from the same source. Now, if a customer meets with a specimen of imperfectly ripened honey, it is not at all unlikely that he will form his judgment more or less of all honey, from the sample set before him, and if I sell five lots of good honey and then one of poor the last sample does much to make the customer think all future lots will be of the same quality. In short, I strongly suspect that in any market if never any but the very best were sold the taste for it would be perceptibly increased. The question then arises, can we make all our honey of first quality? I am not sure, but I think we can at least make some improvement on the past. It is hardly worth while here to discuss the means of producing perfectly ripened honey, but if we have any that is not up to grade what is to be done with it? It is certainly not wise to encourage the uneducated idea that "honey is honey," and try to sell all at the same price. The fair and honest way is, represent it as it is, and let the customer know just what to expect. I suspect that many of those who ship to other than home markets make a practice of doing what I have too much done, send off that which would bring the highest price and put the rest on the home market. This brings us right down to considering what is to be done to better the home market, and I can hardly do any better than to say that what I have written above applies. Let the customer always expect honey of the very best quality and do your utmost to cause no disappointment in that expectation. If any honey that is not up to the mark should be on hand, it may be a question whether it should be put on the market at all, if any use can be made of it that shall not involve an utter sacrifice of its value.

Marengo, Ill.

NUMBER SIX.

R. L. TAYLOR.

Honey-trusts and honey-markets.

Much is said in these latter times about combinations and trusts and corners for the controlling of the markets; and honey-producers have caught the contagion and are nervously contriving some way to keep up if possible the prices of their product. But I fear they are as certain of disappointment as were those who sought Eldorado and the Fountain of Youth. The sugar trust and the oil trust can control, to some extent, the market prices of the articles in which they traffic because the refining of those articles is in few hands, so few that they are comparatively easily named, numbered and brought into combination, and when combined an easy supervision is had of the business doings of each member, but the honey-producers are numbered by the ten thousand great and small, and the "great" are but a small fraction of the whole.

When the farmers, the producers of wheat, succeed in fixing the price of that commodity so as to yield them a fair return, then beekeepers may hope to do something in the way of selling honey at an artificial price. No, not even then; because in the production and use of honey there are certain peculiarities which do not attach to the production and use of wheat. Wheat is a staple and cannot well be dispensed with by consumers. Honey is a luxury and is really necessary in but limited qualities. An artificial price even if it were not a high price would greatly curtail consumption. The name would condemn it. The less said even about a honey-trust the better. Again, where wheat is produced, it is generally the crop that the farmers depend upon mainly for their revenue—they make their money out of it,—they know the cost of it, and are careful to get the very highest price possible; but in the view of small honey-producers their honey costs nothing, what they get for it is clear gain. It goes easy and they accept thankfully what is first offered. And, moreover, while wheat may be safely hoarded, and the owner with his wheat in the granary is content, honey in the hands of the unskilled is perishable, and the uninformed producer is nervous about it until he is rid of it.

And there are other difficulties to be encountered. Honey differs very greatly in quality and in the manner in which it has been handled, and it is no easy matter to safely pass upon its comparative value unless one knows that it is honestly packed. Who can be found competent to grade and fix the price proper for each quality? And then consider that at the prices heretofore ruling as fixed by the law of supply and demand the market has been supplied from the beginning to the end of the year with scarcely an exception. What would be the result if prices were enhanced arbitrarily? It seems to me the inevitable outcome would be that the crops produced would not be consumed unless that action were supplemented by some other line of effort which of itself without the arbitrary action would enhance the price naturally. But it is not necessary to dwell upon this point. The whole scheme is visionary in the extreme.

But even if that scheme could be made successful there is a better way. I see no reason to complain of the prices that have ruled heretofore. I do not object to the giving away of their honey by neighboring beekeepers if they choose that way of doing business, nor even to their selling it at half price if they are willing to do so. When I, getting full prices for my honey, can not compete with him who sells his honey at half price, I shall cheerfully yield him the field and rejoice with those who rejoice over cheap honey. Indeed when I consider that honey is a luxury, and not a very cheap one to consumers, and how few there are comparatively who use it as food, I am surprised that the prices of honey have been so well maintained. The cost of producing honey is constantly decreasing. We are adopting new methods and learning economy of time. We get less for honey than formerly but it costs less. When we come to be able to winter our bees on natural stores safely and well, and to prevent at will the swarming fever in the bees, the cost of honey will be again considerably decreased. The problem will surely solve itself. When our present method of disposing of our honey fails to yield us a fair profit we shall be driven to the cultivation of our home markets and in other ways to increase the number of the consumers. So it is seen we have two ways of escape from unprofitable prices, viz.: lessening the cost of production and increasing the number of consumers. Perhaps not one in ten of our population ever eat honey as food. This swarm of non-consumers of honey everywhere about us presents a rich harvest ripe for the sickle of the honey-producer. This harvest will be gathered when the necessity for it is felt. Many ways to assist in this work will occur to every beekeeper, and in conclusion I will call attention to a single one. We should give more attention to the better distribution of our product.

It is important that honey be placed within the reach of every possible purchaser. A luxury like honey will not be sought afar. Let no one think he does the cause a service when he counsels the proscription of the grocer and the commission merchant. No hand ready to help should be allowed to be idle. Everyone will reach some whom no one else could. With honey judiciously displayed in every city, village and hamlet in our country the harvest would truly be great.

Lapeer, Mich.

Prevention of Increase.

P. H. ELWOOD.

He who allows his bees to increase by natural swarming at their own good pleasure may be called a beekeeper; but it is only he who has learned to control increase, making it much, or little, or none at all, as circumstances may direct, that has earned the title of bee-master. It is often well to know how to run a yard of bees without making any increase. When the beekeeper has already more colonies than he can manage, it would seem foolish to make more unless he has a good market for bees. Quite often, when his locality is already overstocked, he finds it is his neighbors only who wish to buy and at a price that barely repays him for foundation and hives. Sometimes a person could profitably keep one yard in connection with some other business if he knew how to manage them without increase and with the least expenditure of time and work; the time and work to be chiefly given when the beekeeper can best spare it and not at the call of the bees. This method of running one yard with some other occupation and the minimum amount of work and expense may be the practice of the future, one strong argument against beekeeping as a specialty being the uncertain value of the business when carried to a forced sale by the death of the beekeeper and the consequent uncertain provision for his family. Then another very large class are now producing honey at a greater cost than the selling price and it would be unwise to enlarge a business already conducted at a loss. And it is always better to have the control of increase like everything else, well in hand and under well-laid plans, then a sufficient number of hives and supplies can be secured with some reasonable expectation of having them all used and yet have enough in those years in which bees when left to themselves often swarm to death.

When running bees to extracted honey it is comparatively easy to control swarming; for by giving them a large amount of room for both brood and honey, and extracting the old honey and afterward the new just before the main flow commences (as ought to be done in any case as it is of inferior quality) there will usually be no attempt to swarm; with reasonable attention to extracting afterward. This method is simple and it would be well if beginners would stick to the extractor until they are successful with box honey management. When box honey is raised it is much more difficult to control increase. It is easy in a swarming year to raise a crop of swarms but not so easy to raise a crop of comb honey. The well-filled brood-nest so necessary to the successful production of comb honey is also very favorable to the forcing out of swarms. A large hive well shaded and ventilated, with plenty of room in both brood and surplus apartments, will retard and sometimes prevent the issue of swarms but there is no certainty about it and it is better to have swarms issue earlier than in the middle of the honey harvest as is apt to be the case with large hives. Cutting out queen cells, the withdrawal of brood, and the management of the brood-chamber as recommended by Mr. Simmins, will also delay but not prevent swarming, while there is danger of throwing the colony into a condition known as having the swarming fever. In this state work to a large degree will be suspended and the bees show by unmistakable signs that they are dissatisfied. Many bee swill desert their own hives and enter others which seems to disaffect these also. The beekeeper will be similarly affected when in the midst of a honey flow he comes to look into the surplus receptacles or to notice the number of idle bees hanging about the hives. It is only strong swarms that produce box honey satisfactorily and no system of management will be successful unless the colonies are built up strong before the harvest. This is particularly true of the method I am about to describe.

I recommend the clipping of queens' wings, believing it to be the best. There is then no loss of unexpected swarms and no swarms to be hived from inaccessible places. In every apiary there are some colonies, in some seasons a majority, that will work right along without any attempt to swarm. When no increase is desired there is no need of molesting them as they usually produce their full share of comb honey. All other colonies as they complete their preparations for swarming

should have their queens removed with one or more sheets of brood and enough workers to protect it and be placed in another hive or small receptacle provided for her. All queen cells old enough to hatch within nine days should be removed from the old stock and the remaining brood combs pushed together contracting the brood nest that much. On the eighth or ninth day after, all cells should be broken from the now queenless hive leaving them hopelessly queenless. In a week or ten days longer the old queen may be smoked back into the old hive. The success of this will depend somewhat upon the race of bees kept. When we had black bees there was seldom a failure but as our bees became Italianized the losses were greater. Mr. Crane, one of the best beekeepers in the country, takes this time to requeen the most of his stocks by giving them a virgin queen which is usually well received. If the queen is to be changed the old queen can be killed at the time of her removal and the brood-nest not contracted. The brood removed may also be returned to the old hive or it may be used for nuclei, or put into extracting swarms, or used in a variety of ways that may suggest themselves to the beekeeper. No colony should be left queenless longer than twenty-one days, as after the brood has all hatched there may be no empty cells for storing pollen except in the sections. If the queen cells are broken out at the end of seven days after the removal of the queen there will often be another brood of queens reared from the brood remaining. I have never known such queens to lay anything except drone eggs, but they are capable of leading off swarms or of establishing a monarchy in the old hive that is hard to overthrow. Before I learned that the books were not right as to the time for breaking out cells to make a colony hopelessly queenless I had many such cases and this is the only kind of fertile worker I have ever been troubled with.

This system of non-swarming works well with us and undoubtedly will do the same in localities having a similar honey flow. In other sections, modifications of the plan may be adopted to meet the varying circumstances. With sectional hives like the Heddon a whole half of the brood-chamber might be taken with the queen and returned with the queen at the proper time, which with us is usually near the close of the white honey harvest. Or the sections might be changed leaving the queen out longer than the twenty-one days. It is said that queenless colonies do not work so well but we by this method get extra strong colonies and as much honey as by other methods with less work and expense. This method of non-swarming is not recommended after a short trial for it has been worked for several years with thousands of swarms in different beekeepers' hands and tons of honey produced. In answer to the objection that honey produced by queenless stocks is not as choice as that produced otherwise, I will say that honey so produced took the highest prize at the Centennial in 1876, and later at the Paris Exposition after having been carried across the ocean and exhibited in the original packages.

In the fall we have not found the brood-chambers of such hives any heavier on the average than others, neither have I or other beekeepers discovered that such colonies failed in winter because of too much bee-bread. With reasonable attention we are sure of having no swarms issue and I know of no other way by which we can uniformly reach the same result.

Starkville, N. Y.

Prevention of Increase.

F. L. SMITH.

DESIRABILITY to prevent increase is to be decided by the apiarist, and to do so intelligently a thorough knowledge of his locality is quite necessary. I will illustrate what kind of locality and under what circumstances it may be advisable. A locality where honey comes in in moderate quantities, at best, or in one grand rush of short duration. Under the above condition it is better to keep the colonies undivided retaining the whole force at work storing supplies. Again, if the apiarist's time is occupied with other pursuits which prevent his devoting more than a small portion to the apiary, it would be a prominent factor in making the decision.

During apple bloom the stronger colonies may show indications of swarming which can be prevented by drawing hatching brood and giving to weaker ones, helping them to be ready for the coming white clover yield. A frame of empty comb should be inserted in place of one removed. Placing a case of sections on at the same time helps to suppress the inclination to swarm for a while. But there comes a time when there are no weak colonies to strengthen, and, if left to carry out their natural inclination, the owner's visions of a good honey crop will be dispelled unless some method is employed to prevent a division of forces, and that need not interfere or prevent the colony from

working with their usual vigor. Having experimented with the various plans given by different writers, none have given such perfect satisfaction as the one known as the queenless method. Just as white clover begins to yield nectar, whatever colonies are found making preparations to swarm are to be manipulated as follows:

Have a nucleus box of sufficient size to contain three frames; place in such box two frames that have some honey; then remove one frame of hatching brood, with adhering bees and queen, to be placed in nucleus between two frames already there; cover the box and let it remain; place a dummy in old colony to take place of frame removed; examine carefully and remove all queen cells if any have been started. If sections are approaching completion it is best to place an empty set on first, those removed being placed on top; or, in other words, tier up. With honey coming in freely the constantly hatching brood may make it necessary to place the third tier of sections on. Removing the queen from the colony makes but slight confusion which subsides in a very short time, when work progresses quite as well as before her removal. I have found it better to leave the colony queenless ten days, at which time all queen cells are to be removed. If the removed queen is valuable, she should at this time (ten days) be caged and introduced back; the bees in nuclei shaken from the combs in front of their former home; the dummy removed and the frame of comb and remaining unhatched brood replaced from where it was formerly taken. If the removed queen is not considered of value, she should be destroyed and a young laying queen introduced which I much prefer to introducing the old queen. If the old queen is introduced, and there should be another honey flow after white clover, there is a probability of the same manipulation being necessary again which would not occur with a young queen.

By allowing the brood to remain and hatch in its own hive the colony will continue to increase rapidly; therefore allowing every bee of proper age to go to the field as foragers.

The above method is less labor than any I have ever tried, and gives better results in comb honey.

If a swarm should issue naturally, the queen is to be removed, queen cells destroyed and treated in every respect as above, returning the swarm to the hive from which it issued.

Before closing this it would be quite proper for me to say, after commencing this article, among other bee periodicals brought by mail was the January number of the *Beekeepers' Magazine* which contained an article from the able pen of Mr. G. W. Demaree of Kentucky upon the same subject. After reading the article, I found the principal factor employed in the method described above to be identical with Mr. Demaree's; that is, "queenlessness." His manner of disposing of brood differs somewhat from mine, which I will not allow myself to criticise here.

Chittenango, N. Y., Jan. 10, 1888.

By the Manager.

Sugar from Honey.

The following editorial appeared in the API, Oct. 1886.

The National Convention, which meets at Indianapolis this month, should take some action regarding the matter of disposing of surplus honey. We suggest for the consideration of the meeting that the sum of $5,000 be collected from the beekeepers throughout the United States and paid to the person who will devise some method for converting honey into sugar similar to granulated sugar. We believe it can and will be done, provided a proper inducement is held out and a sum sufficient is offered to compensate for the time, trouble and expense of conducting experiments.

The above sum can be easily raised from the beekeepers of this country. Small producers might pay $1 and larger ones as high as $5 each. We respectfully submit the above suggestions to the convention for its consideration.

Those present at the convention well know about how much notice was taken of the above suggestion. Well, I have the satisfaction of knowing that the idea was not so very "cranky" after all, as the following extract from a letter to the API will show.

Plaquemine, La., April 20, 1888.

MR. H. ALLEY.

Dear Sir: I received a copy of your valuable Journal. It contains many useful articles for the beekeeper. I hope you will pardon the liberty I take in writing you, but one of the articles is of great interest to me. I am a practical sugar maker of the sugar cane and am under the impression that I can make a very good grade of sugar from honey, which I have been contemplating doing for some time, but have not the means to give the experiment a fair test. Should the beekeepers of the United States decide to offer a premium to the one who will put the matter to a practical test, I shall be glad to make the first experiments. I am almost certain that I can succeed; there is nothing difficult about it. We can make sugar from beets and pumpkins, why not from honey? Give me the means to give it a fair *trial* and I will produce the sugar from honey.

Yours respectfully,

ALLEN F. SMITH.

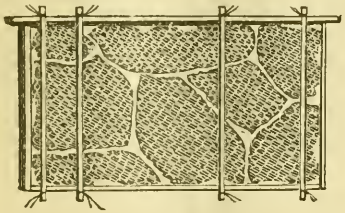
Well, friends, how is that? There's nothing like being a little in advance of some other people. I stated some time since that the extractor must go, and it begins to look that way. I predicted that zinc honey-boards and all other honey-boards must go and (take notice, Editor

Cook) I advise all to wait and see whether I am a false prophet or not. I suggested that the time was not far distant when bees would be wintered on dry sugar. It will be done. Just have patience and some of the sleepy people, so much behind the times, will wake up one of these mornings and find I am correct.

To return to the question. Who of our enterprising beekeepers are ready to aid Mr. Smith in his experiments to convert honey into sugar? Is not the experiment worth testing? Will the bee conventions take hold of this matter? Space will not allow, at this time, more to be said on the subject, but I will refer to it again later on.

Remarks about Transferring.

Very few beekeepers can do a nice and neat job at transferring. Most of those who do such work get their ideas from some work upon bee culture written years ago by inexperienced authors. Below is an illustration of the bungling manner in which some people do the work of transferring or placing brood or other comb in



Transferred combs.

frames. The method of fastening it in the frame is also shown.

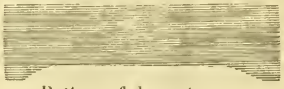
The sticks, bound at the ends with twine, thoroughly represent and put the finish upon a bungling piece of work of transferring. Ought not any person to know, who has had any experience with bees, that all the brood directly under those sticks will be destroyed? Even if the young bees were ready to emerge from the cells, they could not do so, as there is no way they could extricate themselves from such a position. Well, now instead of placing those ill-shaped pieces of comb in the frames, why not take a sharp, thin knife and straighten the edges of each piece so that they will go squarely together, thus filling the frame *solid* full of comb. Don't use sticks for fastening the comb in the frame; throw such, also pieces of tin, to the dogs. Read some of the back numbers of the Api and you will learn just how to transfer.

The proper time to transfer is about May 20, or as soon as the bees begin to gather honey. Some cloudy day is a good time for doing the work, provided it is not too cool; though the bees are taken to a warm room to transfer, yet the weather should be so warm that the bees that fly to the windows during the operation can return to the hive when it is placed on the stand.

There is another advantage in doing such work upon a cloudy day; the bees are all at home and there is no time lost to them in gathering honey and pollen.

The Drone-and-Queen Trap.

Last year I placed several of the traps on some hives in which there were very full colonies. In passing through the yard a little later I found large numbers of the bees clustered outside of the hive and about the trap. This state of things indicated that something was wrong and an investigation was at once made; the bees were brushed off carefully so as not to disturb the trap.



Bottom of drone-trap.

I then found that the back edge of the bottom piece of the trap had nearly closed the entrance to the hive; as, when the trap was placed in position, there happened to be a little dirt on the alighting-board, (some scales of wax and pollen which the bees had brought out and the sun had melted), thus securely fastening it to the dirt-board. The trap was removed and the wood was removed the same as illustrated in the accompanying cut. The traps were replaced and the bees soon returned to the hive and went to work.

There is one other difficulty that some may experience with the trap. The aperture in the cone tube should be larger than it is in some of the traps first sent out. The hole may be safely enlarged to three-eighths or one-half an inch. Before placing the trap on the hive, examine it and see that it is in order.

Notes and Queries.

Capped brood and cell-building.

1. What is the objection, if any, to having capped brood in a cell-building colony?

2. Will a colony that has been queenless a long time build as good queen cells as a colony just deprived of its queen, provided the former be supplied with plenty of

young bees by giving capped brood from other colonies? *California.*

REPLY.

1. There can be no possible objection to giving capped brood to a colony that is rearing queens; in fact, if *all* capped and hatching brood can be given, it would be some advantage, though bees so young as two or three days old would do but little towards nursing and feeding the royal larva.

Unless the frame containing brood had for ten days been from a colony having a queen, there would be more or less uncapped brood in the comb, and in such a case there *would* be objection to placing it in a hive where cell-building is going on. The more queen cells begun by a colony, the more the forces of the bees are divided. I never place brood in any hive in which the bees are building cells.

2. No; a colony under such circumstances will not rear first-class queens. Such a colony would build several cells, but in my opinion there would not be one valuable queen in the lot. There is not vigor enough in the old bees for cell-building and the young bees born in a hive that has no queen would not feel the necessity of one, as bees do that once had a queen; and the excitement attending the loss of a queen in a colony would not be present in the case here cited. The bees need such excitement to stimulate and properly fit them for cell-building.

Pure Fertilization.

Strasburg, Va.

H. ALLEY:

How do you secure pure Italian mating when one's apiary contains black and Italian bees? I know, of course, it is not possible to secure it every time. What I mean to say is, is there no way to increase the chances of pure mating? Will it do to push the Italian colonies ahead and get early Italian drones?

G. W. EBERLY.

I secure pure fertilization by using the drone-trap on all hives that do not contain pure Italian queens, and do it every time, too. If the traps are so used it will be impossible to have even one queen impurely fertilized. The idea of rearing Italian drones, before black drones can appear, would do very well; but how can it be done? The black bees would swarm as early as the Italian, and I fail to see how anything can be gained by having Italian drones ahead of the black ones. Drones appear early or late in the season according to the situation of the drone comb in a hive. If there is no drone comb in the centre of the brood-nest or near where brood-rearing was commenced, drones will appear late, yet if there are drone cells in the central comb, drones would be seen flying early in May and several weeks before any swarms are likely to issue.

Use the traps, my friend, and thus take ease and comfort in keeping bees.

Mating Queens — How Bees preserve Honey.

Lehmaster, Pa.

MR. H. ALLEY:

How do you manage to mate Italian queens with desirable drones to prevent in-breeding? If you have a way, please let me know by letter or through the API. I have read about the sugar barrel being tried with a hole at the top end covered with glass. The queen and drone would mate in confinement or rather fall together in the embrace, but not one was fertilized. At a recent meeting of learned men in Berlin, it was said as a fact that when a bee has filled her cell with honey and has completed the lid she adds a drop of formic acid which she gets from the poison bag connected with the sting. To do this she perforates the lid with the sting. This acid preserves the honey. Have you ever observed in your apiary that such is the case?

L. H. LINDEMUTH.

See answer to Mr. Eberly. There is not a well authenticated case on record where a queen was fertilized in close confinement. I am of the opinion that the bees use no acid to preserve honey in the hive. It is a well-known fact that honey is a preservative and that when well ripened it will keep for years without artificial means to preserve it.

HOW TO INTRODUCE A QUEEN.

The safest and best method tested in the Bay State Apiary for introducing queens is as follows:

The colony to which a strange queen is to be introduced should first remain queenless three days (72 hours). Then the bees should be thoroughly smoked and the queen allowed to run in over the combs during the excitement; or the cage in which the queen is shipped, may be so placed that the bees of the colony can remove the food and release the queen. To do this with our cage, turn back the wire-cloth that covers the food, just enough to allow the queen to pass out when the food is removed.

If one of our fumigators is used to fumigate the bees with tobacco smoke, not one queen in one hundred will be lost in introducing, whether the queen be a fertile or an unfertile one. We spend about five minutes in smoking the bees and blow in only a small amount at a time. Introduce queens just at sundown, as the bees will not then rob, and everything will be all right in the morning.

In no case place the new queen near the colony to which she is to be introduced, until the bees have been queenless the time stated. Cells will be started during the time the bees are queenless, but as soon as the new queen is introduced they will be destroyed. Do not open the hive for, at least, one week after the queen is introduced, as there is danger that the bees will kill her.

Something about Queen Bees.

Probably one thousand customers to whom I have sent queens during the past thirty years have said, "the queen came all right, but is rather small." Well, so they are. There is no reason why a bee, especially a queen bee, should not look small after being confined in a little box and knocked about from one week to ten days in a mail bag.

When I remove a queen from a colony, that has been laying from one to four weeks, they are large and handsome and in appearance are like the one illustrated in fig. 1. But after they have been in a mail bag, or, in fact, have been from the

Fig. 1. Fertile queen.

Fig. 2. Unfertile queen.

colony a week, they look and resemble the queen illustrated in fig. 2. The cuts not only show the great difference in the size of the queens as between a laying and a fertile queen, but the bright color as well. The golden color of an unfertile queen is not very striking or marked, but when a fairly yellow virgin queen becomes fertilized and has commenced to lay, then her beauty develops and what was not a remarkably fine colored queen is now one of the most beautiful.

The Age at which Queens Mate.

I have spent nearly thirty years of my life in rearing and shipping queen bees, yet I never knew a young queen to make a flight until she was five days old, though I have read many reports of their doing so, when they were from three to four days old. Such reports I do not credit as it is contrary to nature as well as actual experience. I never could succeed in forcing a young queen to fly by feeding until she was five or more days old. During my experience I probably have seen 2000 young queens take a flight, yet I never saw even one mate. Sometimes I have waited by a hive for them to come back, and in the course of ten minutes they would return bearing all the evidence of being fertilized.

If the weather is pleasant on the day a queen is five days old, she will surely make from one to seven or eight flights the same afternoon, in order to meet the drone. No queen in my opinion is ever fertilized more than once. The thing cannot be done, though I have known of many instances where queens have met the drone more than one time. This, of course, would not occur if fertilization had been accomplished at the first mating.

These remarks are not wholly new to some of the old bee men, yet they are new and will most likely interest the novice and those who have just begun in the bee business. I notice we have a few old fogies who "know it all," and such have no use for bee-papers.

Dr. A. B. Mason has favored the API with a list of premiums to be awarded at the bee and honey show to be held at Columbus, Ohio, from September 4 to October 19, 1888.

The premium list is a most liberal one, and those beekeepers whose apiaries are near Columbus should make a grand display of apiarian implements, also bees, queens and honey.

As the premium list and other particulars have been published in several papers, I think space in the API need not be taken to further advertise the matter.

The old reader will not fail to notice the change in the form and make-up of this issue of the API. It was our intention to use but sixteen pages, but our friends have so crowded us with advertisements that it was necessary to add four extra pages, and so a cover, as in the past, will be used, for a while, at least. Our columns are wider and smaller type is used, and by so doing the API contains about the same amount of reading matter as formerly. You will not fail to notice that there is no great display of large head lines. All space that can be utilized has reading matter crowded into it. As advertisements "run out" the space will be filled with good articles from our best correspondents.

A fine article from *Amateur Expert* could not be used as was intended in this issue, as the numerous cuts to illustrate it had not come to hand, even after waiting several days for them. The article is in type and will appear in the July issue. All should read it.

I do not know how it is with other people who rear queens, but I do know that the weather here in New England up to May 20 has prevented any one from doing anything at all in the apiary. A few cherry and peach blossoms have appeared

and other blooms will soon follow, as a warm wave appeared on May 21. There are now, in the Bay State apiary about 200 fine queen cells in process of construction, and if the weather is favorable queens will be mailed as early as usual.

In no year since the drone-and-queen trap was invented has the sale of them equalled that of the present season. One man writes thus: "Please send me thirty traps. My friends saw the one you sent me last fall and want me to get some for them." A few beekeepers do not use the traps, and continue to keep behind the times. Never mind! the prejudice some people had against them is fast being overcome. In a few years, wherever you find bees you will find the trap.

Gleanings from Correspondence.

A good Hive.

Taunton, Mass.

MR. ALLEY: Please ship two B. S. R. Hives to S. A. Lincoln. Have sold my apiary. Often have inquiries about hives. I recommend yours as it is the best of any hive I have seen.

JAMES H. BOSWORTH.

Ahead of the others.

Morristown, Pa.

MR. HENRY ALLEY: I have the API from its first issue and though I have taken several other bee journals I had more practical hints in the API than in any of the others.

GEO. SPITLER.

Best bee-paper he ever saw.

Glen Rock, Neb.

MR. ALLEY: I am well pleased with the API. It is the best bee paper I ever saw.

DR. C. L. COOK.

The Best Queens he has.

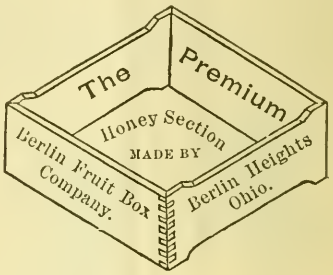
Santa Monica, Cal.

MR. H. ALLEY: I would like to say that of the several hundred queens I reared last year the most of them were reared by your method and they are the best I have. I prefer them to queens reared under the swarming impulse.

A. H. NASH.

I claim that queens properly reared by the methods given in the *Beekeepers' Handy Book* are far superior to those reared by other known methods, and this claim is intended to be a very sweeping one. I feel quite able to back up this statement by actual facts. I make no claim that *all* my queens are reared at swarming time, as my bees swarm only during the proper swarming season. In this respect the bees in the Bay State apiary are unlike those that swarm from May 1 to October 1, or as long as the owner has queens to sell. They are a fine race or strain to keep.

Advertisements.



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OHIO.

D. A. McCord, Oxford, Butler Co., Bees, queens and poultry.

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H. G. Frame, North Manchester. Bees Queens.

THE AMERICAN APICULTURIST

A JOURNAL FOR THE NOVICE AND EXPERT.

Devoted to Best Races of Bees, Best Hives, Best Implements and Best Methods of Management to make Beekeeping a Success.

PUBLISHED MONTHLY. HENRY ALLEY, *Manager.*

VOL. VI. WENHAM, MASS., JULY, 1888. No. 7.

Correspondence.

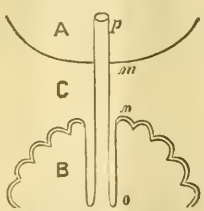
Contribution to the Physiology of the Honey-bee.

L. STACHELHAUSEN.

I AM willing to write a series of articles for the API, in which I will explain how the bees feed themselves and the larvæ, and something in close connection herewith. Nearly all the ideas given in the following articles and all the experiments belong to Rev. Schoenfeld in Germany, who not only is a practical beekeeper, but a scientific entomologist and physiologist, too. The most of them, I will say, are entirely new and, as far as I know, were never before published in the English language. They are of eminent scientific interest, but important too for the practical beekeeper. The space of this journal will not allow to give a full translation of Schoenfeld's different articles, so I will write as briefly as possible.

The stomach-mouth.

If we carefully examine the honey-stomach of a bee, we shall see on the lower part, somewhat sidewards, a small body



A is the honey-stomach, *B* the true stomach, *C* the stomach-mouth.

about as large as a half poppy-grain. This body is the organ which Schoenfeld named the stomach-mouth. This organ has been known many years, but its function was not correctly explained.

The cut is no true picture of the organ. The opening *p* is closed by four three-cornered lips which together form over the round tube, *n*, *m*, *p*, a pyramid. The bee can open these four lips arbitrarily by muscles. The tube *p m n* is prolonged into the true stomach till *o* (*n o* is about one millimeter long) here turns up and goes back to *n*, where it is in connection with the wall of the true stomach. Around the throat *m n* are a great number of muscles. It is easy to see that the throat *m n* can be prolonged by turning out the piece *n o* inside of the true stomach. This organ is very important; without the same the bees could not store honey at all. We shall see this, if we explain

How the bees eat honey.

It is well known that the bees take honey or nectar from the cell or from flowers by their tongues. How this is done I will not explain here. This fluid goes through the pharynx into the honey-stomach. If the stomach-mouth in *p* had a round opening only, as represented in the cut, the food brought into the honey-stomach would at once pass into the true stomach, but the four lips close this opening, and so it is possible that the honey-stomach can be filled and by contraction of the same (arbitrary again) the bees can empty this honey-stomach again through pharynx and outer mouth.

But necessarily the four lips are to be closed and opened arbitrarily. If the bee wants to get some honey into the true stomach the four lips are opened and some honey goes from the honey-stomach into the true stomach; so these four lips are closed and opened, if the bee wants to eat or not.

We see now, how it is possible, that bees can winter and take no honey from the cells for some time. A swarm can be confined for some days, while a bee with empty honey-stomach will starve in thirty-six hours.

We can say this organ is the true mouth of the bee, and the true alimentary canal commences here. The outer mouth and the tongue are merely the hands by which the bees eat, and the honey-stomach is the store-room.

How the bees eat pollen.

Somewhat different is the function, if the bees eat pollen. The pollen comes into the honey-stomach through the outer mouth and floats here in a fluid. This fluid is honey *and water*. The stomach-mouth can take those pollen grains only which float quite near the opening *p*. But here are some hairs; as soon as a pollen grain touches these hairs the four lips are opened and so the pollen-grain is caught; the same cannot go back into the honey-stomach when the mouth is opened again, because other hairs hold it back. If a few pollen grains only are in the honey-stomach, the function is a little different, the honey-stomach is contracted and this is done by pushes; hereby the piece *m p* moves differently sidewise and so the pollen-grains can be caught.

Here comes the turned-up part *n o* in function. If the honey-stomach is contracted, it moves in the direction to the head of the bee, and the part *n o* slides out of the true stomach. More important is this, if the bee vomits the honey, when the honey-stomach is very quickly moved against the head; this would be dangerous for the fine tube without the turned-up part. Around the part *m n* are muscles which save the organ from moving too far from the true stomach and pull the honey-stomach back after the contraction is finished.

We have further to explain for what purpose the bees eat pollen. It is known that larvæ, as well as bees, need a certain amount of nitrogenous food like other animals. Honey contains a very small amount of nitrogen (about 0.17 in 100 parts), so we have pollen only for this purpose.

In the first three months of the winter, as long as the bees are very quiet and their vitality is lowered, the bees eat very little honey and they may need no pollen at all; more than this, they may, to their advantage, spontaneously dispense with pollen. But as soon as they become uneasy and desire to breed, they need some pollen. It is impossible at all to prepare the jelly for larvæ without pollen (more about this later).

That bees need pollen is proved by the energy in carrying pollen in early spring and the great amount of pollen consumed at this time, when breeding goes on rapidly. This breeding is stopped when from unfavorable weather they cease bringing in pollen for some time, and, finally, disease and death of the nurse-bees are the result, if they are forced to breed for some time without pollen, as many experiments have proved.

Further, the bees need pollen to keep their own body healthy and to preserve the vitality. It is very difficult to prove by experiment how long worker-bees can live without albuminous food, because we cannot keep them confined as long.

Queens and drones do not eat pollen, but honey only. To get the necessary albuminous food, they are fed with jelly or chyle of the worker-bees. To find out how long drones can live on honey only, Schoenfeld experimented in the following manner:

Two combs, each one containing 200–300 grammes of freshly gathered honey, were each surrounded by a wire screen, so that drones could move on the combs. One of the combs received a single wire-screen, the other was surrounded by a second wire-screen, so the drones could not have been fed by the outside bees.

In a cold, rainy week 200 drones were caught and to each of the combs 100 drones were introduced. These combs were hung in the centre of the brood-nest. On the evening of the fourth day the drones in the double screen were very weak. On the fifth day all the drones were dead but four. The drones in the other screen were as lively as ever and flew away when a few days later they were released.

Both were in the same condition; the want of albuminous food only could be fatal to these poor fellows. Worker-bees would surely live longer; but, nevertheless, this experiment is a proof of how necessary the pollen food is for the bees.

Selma, Texas.

Fixing Comb Foundation.

I observe that the question of foundation fixing has been more or less in the minds of various correspondents to several of the American bee-papers, so I thought a description of some of the methods in general use on our side might be of interest to your readers. Descriptions of the various methods themselves would necessarily be ponderous to be intelligible, so I have asked for and gained the permission of Messrs. Abbott, Blow and Neighbour for the use of the cuts used by them in their trade catalogues, in the hope that my work in writing, and your readers' labour in reading, might be lessened thereby.

In the early days of Carr-frame hives we used to make strips of wax-guide on the frames; afterwards, when foundations became a success, we used to fasten strips of foundation, and often whole sheets,

with melted wax. This method, especially when whole sheets were used, in the hands of people who only had two or three hives, as hundreds of beekeepers have in England, often led to failure; as, for lack of care, the foundation was not securely fixed and when the bees clustered on it, down came the whole lot, to the owner's disgust and the bee's discomfort.

This led to hivemakers running a sawcut down the centre of the top bar, and cutting one-half of the bar asunder at one end, which allowed the sheet of foundation to be placed in position in the sawcut and the half of the bar was fastened down on it securely by two screws or wire nails.

Fig. 1.

This style is shown at fig. 1 which is a cut of Messrs. Abbott's top-bar; the projections on the ends are to keep the frames 1½ inches bare, from centre to centre, as they hang in the hive, and I need scarce point out that the two sides and the bottom-bar are not shown in the cut, for the sake of simplicity.

tion is not in general use here and also that most of us use full sheets of foundation both in the brood-chamber and also in sections. Foundation is cheap with us; stout, for brood-chamber, being as low as 1s. 4d. per lb., consequently it pays to use it. We also try to get the combs attached to the sides of the frames; they stand extracting better as well as economizing space, on the principle of the less bee-passages at the ends of the combs, the greater the number of the cells to fill with brood or honey.

If you refer to fig. 2, you will observe the top-bar is split the whole length, only one-half is nailed down to the sides of the frame, the movable half being held on by the distance spacers, very common here, known as "metal ends." The hand in the cut has just withdrawn the second end, allowing the movable half of the top-bar to fall off. The other metal end is shown lying on the bench. Refer again to the cut and you will see a groove in the inside of the end of the frame. The sheet of foun-

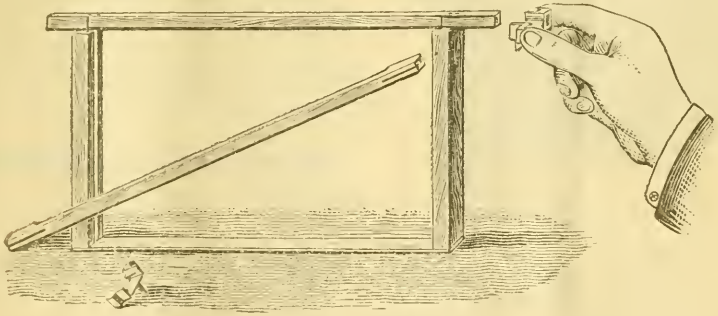


Fig. 2.

Fig. 3 is an end section of a top-bar showing a new process that Messrs Abbott have patented. Two grooves are made in the underside of the bar, one in the centre for the foundation and a second and larger groove by the side of it to take a strip of wood of wedge section. When the foundation is placed in position, the wedge-shaped piece is forced in its groove, and this holds the foundation so tightly that you cannot pull it out; the wax-sheet will tear first, rather than the wedge let go its hold.

Fig. 2 is Mr. Blow's patent frame. I should have explained that wired foundation is cut the exact length to fit in these grooves; the half of the top-bar is then laid

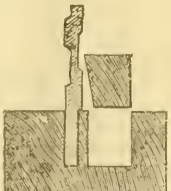


Fig. 3.

on in its place. The two metal ends are

forced on again, no nails are required and you have the result shown at fig. 4.

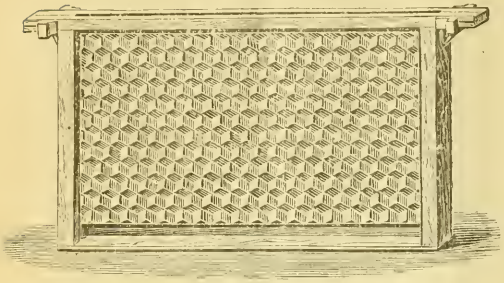


FIG. 4.

We will next deal with Messrs. Neighbour's method. They run the patent of Mr. James Lee who has brought out many of the notions used among British beekeepers. Lee's frames are put together without nails or screws; the top and bottom-bars are both split and the frame is held together by "dovetails" as a glance at fig. 5 will show.

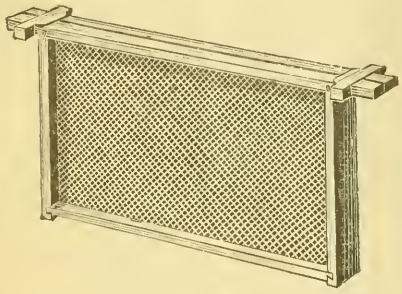


FIG. 5.

The "metal ends" keep the top-bar together and hold the sheet of foundation firm, and the saw-cut in the bottom-bar is large enough to allow the foundation to hang loose in it. Should the foundation "sag" as it sometimes will in hot weather while the bees are working it out into combs, this large slit allows the "sag" to drop through the bottom bar and when the bees work down to the bottom-bar they make the cells fast. You then have the frame filled completely with comb without "inverting," and any "sag" there might have been caused can be cleaned off level with the bottom of the bottom-bar. This plan allows of perfect combs without a bee-passage; moreover, the combs are worked as level as a board. Lee's frames are also easy to ship, with cheap freights as a consequence, as they pack into a very small compass and can be put together by the beekeeper without nails or screws.

SECTIONS.

I will now tell you how we apply similar ideas to sections. We mostly use one-piece sections; many of us have split one quarter and put the foundation in as we fold them as shown at fig. 6.

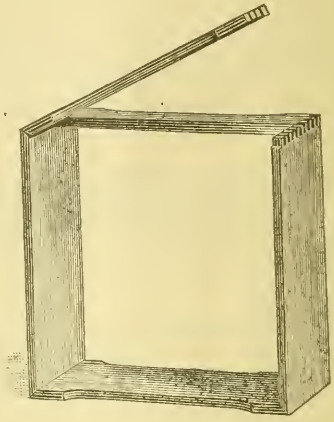


FIG. 6.

But the difficulty in folding was, that as you pressed down the cap you drove the foundation before it without getting a grip. Messrs. Abbott have overcome this difficulty by making the slit on the bevel, and also by making it larger on the outside than the inside as shown at fig. 7.

FIG. 7.

This slit forms a "dovetail" to hold the foundation which is gripped so tight that it will tear asunder rather than the slit will let go its hold.

Mr. Blow makes a groove $\frac{3}{32}$ inch deep and $\frac{1}{4}$ inch wide all round the centre of the inner walls of the section as shown at fig. 8.

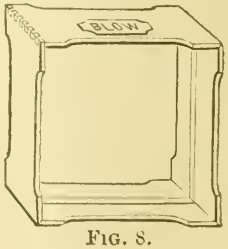


FIG. 8.

The foundation is cut the exact size and is inserted as the section is being folded. The sheet thus fills the whole space; "pop-holes," as we name the bee-passages, are avoided, and sections perfectly filled is the result. A little melted wax run along the uppermost groove is an advantage and the bees soon make fast the sides.

Mr. Lee's patent sections sold by Messrs. Neighbour are made on the same principle as Lee's frames. The cut, fig. 9, shows

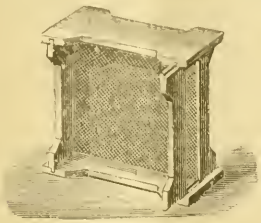


FIG. 9.

one of them. This section is made of six pieces and put together with "dovetails." The cut shows one-half of one side slightly extended; it wants a tap with the hammer to send it close home and confine the sheet of thin foundation.

It would be very vain of me to attempt two or three columns of "gush" on the advantages of getting good section honey. That is admitted by all. The best always commands the market and the inferior always pulls down the price of the best. It has been the work of our Beekeepers' Association to create a market and a supply at the same time by holding honey fairs and shows and offering silver medals, diplomas and prizes. The better filled the sections, of course the better sale and the greater chance of winning a prize. A diploma is always a good advertisement; consequently, our aim has been to do what we could to induce the bees to fill their sections perfectly. We use a high quality wax, and free trade gives us the pick of the wax of the world. The foundation must be spotlessly white, clear and very thin for sections. To ensure them being filled we use full sheets and give the bees passages between the rows of sections in the crate and, by means of "slotted" dividers, passages from section to section also.

In conclusion, I wish to say, these remarks and the illustrations I have given are not intended to set off our methods against yours to induce a wordy contest as to whose are best, nor to start anyone "calling names," but simply to give you an opportunity of comparing your methods with ours without going to the trouble of searching through a quantity of our bee literature to find it.

Some beekeepers here like to work their sections in clamps of threes so that they can 'jump' them from the outside to the centre if necessary. The cut, Fig. 10,

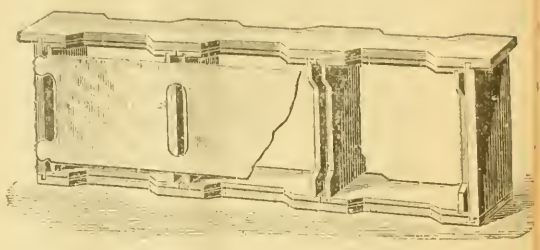


FIG. 10.

shows this, but my object in giving you the cut is not to show that feature, but to show how Lee's section when standing in rows in any kind of section case gives a bee-space passage between each row of sections, and also to show how the "slotted dividers" allow the bees to pass up and down the rows. If the bees have no passages in the combs, it stands to reason they must have passages elsewhere; this provides them.

Wishing you all a prosperous season and a good price, Fraternally,

AMATEUR EXPERT.

England, "May day", 1888.

The Honey Market and Other Things.

G. W. DEMAREE.

THE several articles in the June issue of the APICULTURIST are worthy to be read carefully by all honey producers. I was pleased to see that all these writers had the good sense to discourage any attempt on the part of beekeepers to resort to the rotten schemes of the shoddy tricksters of the times. I refer to combinations, "trusts" and monopolies of every description. Last season the honey producers of this country were beset with beseechings to meet in convention and form some sort of a "trust" to spring the price of honey in some of the large cities. Of course it meant a sort of trust to swell prices in the already-opened honey markets, for certainly the great field is yet unoccupied. It is quite encouraging to see that the greater masses of beekeepers are honest and untainted with the frauds of the times.

There is a wide open field for the products of the apiary, and if beekeepers

have the honesty and steadiness to work and wait to grow in an honest and safe way, they have nothing to fear. Consumers will multiply and the market will keep pace with increase of production. The effort now being made to introduce honey in every corner of the land will save the bee business and make the prospects bright for years to come. Honey should be brought to the tables of all the people. It is not so important how it is done if it is done effectively. Some beekeepers object to "giving away" samples of honey. I suppose it hurts them to do it on account of the loss they appear to sustain at the moment they part with a small sample of their honey. But the practice of distributing samples or gifts of honey has been a paying business with me, because it has been the cheapest and most effective method of advertising, not *honey* simply and generally, but it advertises and brings buyers for *my honey*. Many people never taste honey because it is not brought to their immediate attention, and many such people discover that they have a very keen relish for honey when they have had the opportunity to partake of it. It is such people that make the best of customers.

Our country is in danger on account of monopoly and all sorts of trusts and schemes to make the strong stronger, and enable them to grow rich by crushing the masses under their feet. The tendency of the times is towards a "strong government," because it makes safe the hoarded wealth of the few, gotten by the use of the thumb-screw and the rack, in the form of monopolies, trusts and every species of deviltry. Beekeepers belong to the *masses* that are being preyed upon as material out of which greedy monopolists forge their fabulous fortunes, and it is simply gas and thin wind, to talk about beekeepers forming combinations to force their products. A firm determination on the part of the great masses whose cause is *One Cause*, to throw aside all "isms" and all prejudices and return to honest principles, is the only avenue opened to escape from impending serfdom. I have written nothing in the bee journals hitherto on this subject because I had little hope — precious little hope — that the masses of our people will ever act wisely. They are too much divided and full of "isms" to be of any force collectively.

The tiering up system, its proper place, etc.

I am one of the pioneers in the origin and development of the tiering-up system. Years ago when I used the large boxes on my old styled Langstroth hives I saw the advantages to be derived from the tiering-up plan. I saw that the bees would fill the boxes three-fourths full in less time than they would waste in completing the remaining one-fourth. This led me to the tiering system. I cut slots in both bottoms and tops of the boxes so that they would duplicate each other and could be raised in tiers to any height necessary to accommodate the size of the working force in the hive. This arrangement nearly doubled my surplus yield, and improved the quality of my honey. In later years I applied the tiering system by means of my shallow surplus-comb-cases to take honey with the machine, and to take comb honey with my improved section case system. The tiering system in the production and taking of surplus honey gives the very best results in quantity and quality of surplus honey. It can never be superseded in principle. But the attempt to apply the principle to the brooding department of the hive, as has been proposed in the last few years, will prove an entire failure. I was among the first to apply the tiering system to the brood-chamber, and therefore can speak from experience. Others, however, experimented in that direction. Mr. C. J. Robinson, now deceased, described the "one divisible, separable brood-chamber hive," in an article published in the "Beekeepers' Magazine" for 1882, p. 7. And doubtless others thought of applying the tiering system to the brood-nest. But it matters little as to a question of priority, the plan being a failure when thus applied.

I still have several colonies operating in the shallow tiering cases or sectional brood chamber hive. My cases are nicely made and the tiering is well nigh perfect in mechanical construction, and yet the bees persist in cramming bits of comb between the sectional parts, and the cells are not unfrequently filled with larva, which is necessarily torn to shreds when the sectional parts are separated. And at swarming time the bees utilize the bee space between the sectional parts to hang queen cells in, and when the cells are wanted for queen-rearing they are most likely to be torn or battered out of shape when the sectional parts are separated. The claim that the bees can be shaken out of the shallow cases is mere theory; it is a humbug, in fact. Only a part of the old bees can be dislodged in that way; the very young bees, the most unmanageable part of the colony, will be left behind. To capture the queen in such a hive is a disagreeable and uncertain undertaking. It is said that she can be smoked out and picked up from among the bees that cluster outside to avoid the smoke. This can sometimes be done, but oftener not.

A strong colony when operated on in this way will spread out all over the sides of the case and one feels that he has got a muss of no ordinary magnitude on his hands. Such an arrangement exposes a colony to robber bees when manipulating it, in a way that no other sort of hive can imitate. When you remove one sectional part of the hive you have *three full openings* exposed to the robbers against *one* when handling the single brood-chamber hive. When I have a populous colony in one of these double brood-chamber hives I feel that the least risk is just to let it severely alone as I would an old-styled box-hive; for if you go to pulling it apart it will remind you of the old woman's clock wheels; there will be enough bees to fill two or three hives before you are done with it.

The claim that the close-fitting end-bars of the frames are never glued by the bees is a statement only befitting a patent bee-gum man. The bees will "squirt" propolis between the joints till the sticky frames are unendurable when handling them in the hot sun. But after all the complications are suffered and endured the practical part pans out badly and you gain nothing in way of surplus honey to pay for the extra fuss.

Introducing queens.

My advice to beginners in bee culture is not to be carried away by the *direct* method of introducing queens. The idea that one queen can be removed and another slipped into her place without the bees recognizing the change is visionary in the extreme. The safest way is to cage the queen and depend on your own judgment and own intelligence. This is simply business.

Christiansburg, Ky.

A Grand Food Exhibition.

J. H. MARTIN.

I wish to call attention to a food exhibition to be held in Albany, New York, Sept. 10–15. This exhibition is held under the auspices of the "Retail Merchants Association" of the state of N. Y., and was originally to be confined to producers of food in our own state; but the fact of such an exhibition becoming widely known to the country, it has excited the interest of producers, packers, dealers in canned, preserved, and bottled goods in all parts of the country, and it will be an exhibition of national importance. The salmon packers and mine producers of California will have large exhibits. There will also be interesting exhibits from Maine and from various portions of the South.

It is intended as a grand educating and advertising medium. Thousands of retail grocers and merchants from every portion of our own state, as well as from other states, will attend; not from idle curiosity but for the purpose of enhancing their own interests.

In view of the extensive and interesting features of the exhibition, it seems to the writer of this that producers of honey would be greatly benefited by making a fine display.

We frequently look over the yearly statistics of honey production, and feel that our industry will compare favorably with many other substantial industries. But while other products are pushed upon the markets by every conceivable advertising device, the products of the hive are in many instances set back on the obscure shelves of a grocery store, and are only occasionally called for.

At our state and county fairs, bread and butter, cheese and potatoes, have a more prominent exhibit than honey. Is it because there is less enterprise among honey producers than in any other industry? Or is it because there is less demand for his products? If there is less demand, would not more enterprise in putting it before the public create a demand? And what place could be more fitting to instruct and create such demand than in a gathering where the producer, retailer and consumer meet to consider the value and learn the methods of preparing the food they consume?

The first real enterprising move made by honey producers was inaugurated in January at Utica, N. Y., in the organization of the "Honey Producers' Exchange." This should now be supplemented by a grand educational exhibit in Albany. An extensive exhibit of food, with honey left out, would certainly demonstrate that beekeepers have but little enterprise. Persons desiring more information will receive a bulletin upon application to the writer, who would be pleased to correspond with all interested.

Hartford, N. Y., May 28, 1888.

Cellar Wintering.

H. S. EVANS.

THE writer has been handling bees more or less since the year 1871, and has been a subscriber to the "Am. Bee Journal" for fifteen years. First bought five stocks in box-hives, then used the Thomas Patent

Hive until 1879 when I removed from Canada to Romeo, Mich. Since that time have used the Langstroth hive principally (Heddon's improved). Previous to 1885 always wintered on the summer stands, sometimes with loss, sometimes without, sometimes packed in chaff and again with chaff only in the caps. Would not winter on summer stands now unless packed in chaff. During the winter of 1884–5, like many other beekeepers, I lost 100 per cent of my stocks, and in the spring purchased from W. Z. Hutchinson of Rogersville, Mich., and some from Robertson of Pewamo. About that time the pollen theory was being quite freely discussed, as well as Heddon's 45 degrees temperature for wintering bees. Of course I had learned that out-door wintering was not to be relied on in every case (although I think when bees are successfully wintered out doors they are usually in as good condition, but no better, than when wintered in a proper cellar) and my mind was turned at once to preparing a wintering place inside. I selected a part of my cellar about 12 × 12 feet under our parlor which is heated with a wood-stove during winter and set up studding about one foot from stone wall all around, lathed and plastered on the studding and overhead, and on both sides of the partition between the bee cellar and vegetable cellar; also water-limed the bottom and made double doors in the above named partition to keep perfectly dark. In the bee-cellar was one window. I took out the sash and put in three boards, one on the inside and outside of the window frame, and one in the opening which was left in the lathing and plastering opposite the window. Through these boards I ran a four-inch pipe with three turns in it to shut out light and left a small hole through the ceiling, which of course would only communicate with the space between the ceiling and the upper floor eight inches above. In this I wintered my bees during the winter of 1885–6 without loss and had them stronger through the following summer than ever before, also the winter of 1886–7 without loss, and now (Nov. 28) have twenty-five stocks placed in there which are all quiet and in good condition. When the temperature is about 30 degrees or above, I leave open the ventilator through the window; but when it grows colder it is shut up entirely and the cellar has no ventilation other than the little there might be through the hole in the ceiling. This fall I put them all in with the top-boards glued fast just as the bees left them, and placed a three inch rim under the hives to raise them that distance from the bottom-boards. This is simply to allow the dead bees, etc., to fall away from the cluster and also to give them plenty of lower ventilation. I experimented with a few in this way last winter and they did nicely. The temperature is now 46 and and has never gone below 41. No water in the cellar, but some of the bottom-boards get a trifle mouldy towards spring. The bees keep very quiet and I am pleased with the arrangement.

Romeo, Mich., Nov. 28, 1887.

Clipping Queens' Wings.

CHARLES SOLVESON.

On page 36 of the Api, L. H. Lindemuth wishes to hear from some one "ripe in experience" in regard to the sudden death of his queens with clipped wings. Well, I do not pretend to be "ripe" enough to account for their death from the particulars that he there gives, but this much I do know (after clipping the wings of hundreds of queens) that with me the bees do not give the slightest attention to the absence of one of their queen's wings. Mr. Lindemuth and others would do well to place more reliance on the teachings of men with large experience, such as G. M. Doolittle, A. I. Root, Dr. C. C. Miller and others, before they decide against their methods, from the experience afforded with a half dozen colonies or thereabouts.

It is possible that the queens received some injury when they were clipped. I will here give my method of clipping the queens' wings, which differs somewhat from any I have hitherto seen published. With the thumb and finger catch the queen by the thorax and press her gently down to the comb (I usually hold the comb between my knees) and with a pair of small embroidery scissors in my right hand, remove two-thirds of the feathery part of both of the wings on one side, and when you let her loose she will go about her business as if nothing had happened; while if I take her off of the comb, it is done with more or less violence and with a big scare.

Nashatah, Wis.

Comb Honey.

JOHN HASKIN.

In producing comb honey several things should be considered. First, give the bees plenty of shade. I believe in having shade trees. Trim them up so high that

the bees can fly to and from the hive without hindrance. Put the hives from three to five inches from the ground and elevate the back one inch higher than the front. Lean a board against the entrance so that when the bees come home loaded they can alight on the board and run in instead of falling on the ground. I believe in the tiering-up method and put one tier of sections on as soon as honey is coming in freely, or when the bees are commencing to whiten the combs.

In order to get the bees to enter the sections readily I put a few sections on full of empty comb; the rest with starters of foundation. In a few days if honey is coming in freely and the bees have not entered the sections, I look through the hive and find out where the comb builders are at work and take out such combs and shake the bees into the sections. If they do not run in freely smoke them a little; when they get this tier of sections about half full and there is a good prospect for more honey, I raise it up and put another empty set under with foundation starters. I use the Hodgson section-rack and honey-board. It is, I think, the handiest I ever used or saw. There is no patent on it. By just pulling out two keys it can all be taken to pieces.

It seems that it is not generally understood that in the summer bees will not cap over their honey till it is well ripened, and if there is not another tier of sections put on before the first are ready to be capped over, I believe there is a great loss of honey and waste of time. It is a well-known fact that in a wet season there is a great amount of water with the honey and this has to be evaporated before the bees will cap it over. This is done with the wings of the bees. Virgil (so long ago as his time) seemed to have understood that bees ripened their honey with the "buzz or motion of their wings." Any one may tell almost any night how bees have worked through the day by the buzzing of the bees. Sometimes in the morning the dampness can be seen outside at the entrance of the hive. Well, as soon as the second tier of sections is about half full and the prospect still good for honey, put another tier under the two that are on the hive. Frequently examine the first or top tier, and as soon as the sections are well capped take them off and keep a good watch and if honey is coming in fast put another tier under as before, but be sure that when the honey season is about at a close, you have only one tier of partly filled sections on each hive. When the sections of each tier are well capped take off, and do not leave them on the hive for the bees to soil in running over the combs. Now, if the bees swarm, just put the swarm in a new hive with frames of foundation starters, give the swarm not more than six or seven frames, put a division-board next to them, put the swarm where the hive stood that the bees came out of, move the old hive to a new stand and put the sections on. If you do not use a queen-excluding honey-board take out a frame of brood from the parent hive and cut out the queen cells if there are any; put the comb in the new hive with the frames of starters and, as the season advances, move over the division-board and add a new frame once a week till the hive is full. When you put in the last frame take out the division-board. I will say in concluding this article that we ought to have everything ready for the honey season is only a few weeks' duration at most. Be sure you have sections and hives ordered early.

Empire Prairie, Mo.

Description of Queen, Worker and Drone Cells.

Constantia, Ohio.

MR. ALLEY: If not too much to ask, would you give an article describing the difference in appearance of Queen, Worker and Drone cells?

MRS. W. O. CALKINS.

ANSWER BY DR. G. L. TINKER.

To the experienced eye the difference between the three kinds of cells constructed by a colony of bees is so great that there is never a liability of mistaking the one for the other; but the novice may often be unable to distinguish between queen and drone cells.

The cells, in which are reared the worker bees, are by far the most numerous to be found in a colony of bees. They are also the smallest in size and the shortest in depth and so are easily recognized.

The drone cells, like the worker cells, are hexagonal in shape but about one-third larger and a trifle deeper. They are easily distinguished from the worker cells when uncapped. When they contain larvæ and are capped, it is not so easy for the expert sometimes to tell if certain of the cells contain drone or worker larva especially if the drones, as is occasionally the case, are reared in worker cells. The latter are capped nearly flat, so that a comb of sealed brood presents a surface as even and flat as a comb of sealed honey. The color of the capping of worker brood in old combs is a dark brown; in new combs a light straw color, becoming a shade darker before the brood hatches. Drone cells containing brood are raised up and furnished with a globular capping presenting quite an uneven surface. A

cross-section of capped drone-brood comb will show it to be nearly one-half inch thicker than a similar section of capped worker-brood comb. The color of the capping of drone-brood is usually, even in old combs, nearly white or dirty white, although when first sealed the color is the same as that of the comb. But as the larvæ mature the bees cut away the waxy capping leaving the exposed end of the cocoon naked, but do not cut away the waxy capping of worker brood to the same extent as they always do with drone and queen cells.

Queen cells are usually recognized by their position and shape. They are larger than drone cells, elongated and oval in outline and the internal cavity is perfectly round. They are also built with their axis in a perpendicular line when started in a favorable position, but are often built from the sides of the combs in the midst of worker and drone-brood, in which case the worker cells from which the start is made are first enlarged and then elongated downwards, the mouth of the cell always looking downward before being capped. A fine queen cell is built with a network of small and regular indentations about its sides. Mr. Alley tells us in his valuable treatise on queen rearing that such cells almost invariably contain and will hatch out valuable queens. A few days before a queen cell hatches the bees remove the wax from the end of the cell when the cocoon is seen to have a light shade. About two days before hatching it gradually darkens, when it is said, among queen breeders, to be ripe.

How to tell when bees are robbing or being robbed.

We shall first observe an unusual commotion about the entrance of the hive being robbed and if many colonies are in an apiary, bees will be seen to be flying about all the hives seeking an entrance at the top, sides and ends of the hives. A glance among the hives will show at once to the experienced if robbing is going on. In searching for the colony being robbed, care is necessary to notice that the commotion in front of a colony is not due to the flight of young bees. If the latter, they may be known by their downy appearance and their peculiar flight with heads directed to the front of the hive as if learning to recognize it in future trips. But if the hive is being robbed many bees, heavy laden, will be seen running up the front of the hive before taking flight and the robbers will be seen to be mostly old bees and to dart into and out of the hive as if in great haste. There will also be heard a louder tone in a higher key note than is usual among flying bees.

New Philadelphia, Ohio.

Bees Superseding Newly Introduced Queens after receiving them.

L. JOHNSON.

I have introduced quite a number of queens for several years past by almost all the methods usually pursued, and find that by any of them a queen will sometimes be superseded at three to six weeks, and queen cells be built from her progeny.

Three years ago a fine queen received from G. M. Doolittle was introduced to a hive by the direct method. In about a month she was missing and three very fine cells built from the queen were secured, one of which is still doing good service. In the fall of 1886 a similar experience occurred with a fine Albino received from A. W. Steth introduced on the caging method.

Last fall a queen was received by me from Henry Alley which from appearance I prized very highly. I therefore introduced her by the three-day method, and to my great joy was kindly received by the bees, and began laying rapidly the second day. I carefully looked over every comb to see that no queen cells were being constructed and removed them all. At the end of about two weeks three or four Langstroth frames were well filled with brood in all stages; but in a week afterwards on lifting out a comb, a large queen cell was discovered. On further inspection I found seven or eight more and my fine queen gone. As this was late in the fall, the beautiful young queen hatched from them was not likely fertilized, but she is still in the hive for experimenting in the spring. Other similar cases to these mentioned have occurred under my observation, but have always been late in summer, and when robbers were somewhat troublesome. I think that this is likely the cause. The bees may not be fully satisfied with a stepmother, and strangers by irritating them increase that dislike with the unhappy result. Many colonies doubtless become queenless from the same cause.

Walton, Ky.

Introducing Queens.

M. A. KELLEY.

This important manipulation may be performed in a variety of ways which are well known to most old beekeepers.

But as this is not an attempt to teach the teachers, these remarks must be understood as directed to beginners in apiculture.

To make all as plain as possible, let the whole be divided into different operations as follows:—

1. Cause the bees to fill themselves with honey, either by smoke or by drumming on the hive.
2. Find and remove the old queen.
3. Shake every bee off the combs and out of the hive on a sheet, and put all the frames back into the hive.
4. Sprinkle the bees with water sweetened with honey, and scented with essence of some kind.
5. Hive the bees, as you would a natural swarm, into their own hive.
6. Smear the new queen all over with honey, drop her upon the mass of bees near the entrance and see that she goes in with them.
7. Now just let them severely alone for one week.

This plan has been in use for years without one single failure. It is guaranteed not to fail. But you must comply with these directions.

N. B. If you *do* fail you may send me one dollar to pay for the trouble you have had in trying this plan.

Milton, W. Va.

Transferring.—A Funny Experiment.

J. M. TYLER.

ABOUT the first of April, 1887, I purchased several colonies of black bees in old rickety hives. They had received no attention whatever for a year. Two stands were flat on the ground, with part of bottom-boards rotted out; mud, water and mice had taken possession of the lower story. The bees having frames of honey above worked up there and made their exit through open corners and cracks. There was not a particle of comb below and but little honey above. They were pretty strong and doing well. The rest of the stands, though nearly ready to fall to pieces, were full of rich stores and bees. This seems to set all our packing at naught. However, they were situated on low ground in the corner of a rail-fence, protected by the close proximity of the residence on the north and surrounded by henberry and weeds.

I tied the hives up in sheets and brought them a distance of five miles and placed them in an orchard about two hundred and fifty yards from my apiary. About the twelfth of April, a bright, sunny day, I transferred them, commencing in the morning. Peach and other fruit bloom was coming out pretty freely, nevertheless, my own and neighbor's bees pretty soon found me, and I never was so besieged by quantities of determined and persistent robbers. It put me to my wits' end for several days to prevent the entire destruction of my black colonies. There was just enough bloom and warm sunshine to attract the bees to the orchard, but no nectar. If I could have waited until the beginning of honey flow, say about the last of April, or our full fruit bloom, there would have been no trouble from robbing. There would have been but little if any robbing if I had only transferred late in the evening; but the bad condition of the hives caused me to overlook or take the risk of robbing. I fed them up and they came out all right.

An experiment with bees.

Making an artificial swarm from a catch of robber bees from a brandy distillery may be of some interest to the readers of the APICULTURIST. Last August, about the latter part, the owner informed me that the pomace placed out in the sun to ferment was so thickly covered by bees that it was difficult to handle it without being stung. I concluded to try an experiment by making an artificial swarm out of a catch of a few pounds of these robbers.

I rigged up a bee-trap by making a funnel out of wire-cloth about fourteen inches in diameter at the bottom, tapering to about an inch or an inch and a half at top, which was inserted into a wire-cloth cage used for shipping bees. The distillery was located just beyond the outskirts of the town. I drove over to it one bright day. Sure enough the little rascals were there, a perfect army of foragers of all grades,—pure Italians, hybrids and blacks, from my own and neighbor's apiaries, scrambling and pushing each other with all their might, apparently in perfect good humor. They were having a regular picnic of cider drinking. The pomace was setting outdoors in casks and was so thickly covered in places by the bees that you could not see it.

I set the funnel over the thickest clusters on the pomace and very soon had my cage full of bees to their great discomfiture, but to the amusement of the distiller and bystanders. I took them home, sprayed them pretty freely with sweetened water scented with peppermint. I put them at night in an empty hive with one frame of brood and honey and adhering bees with a fertilized queen attached to the comb in a Peet cage. I tacked a wire-cloth over the front of hive until the following day, removing the cloth at night. I fed them up till first of September, when the fall flowers began to bloom. I never had a swarm to

do better; they were all workers, they filled the entire brood-chamber with honey from the wild aster and tangle-foot and went into winter quarters about the strongest hive I had.

Season of 1887.

There was but little surplus honey made here on account of the severe drought. The fall yield was greater than usual, and the strong colonies made a sufficient amount of fall honey for winter stores mixed with a great deal of pollen. The bees are now affected from it, more or less, with diarrhœa, as I notice in their cleansing flights; but it is not so damaging here as it is in colder latitudes where they remain confined all the time and cannot relieve themselves in cleansing flights.

Bowling Green, Ky., March, 1888.

By the Manager.

Sugar From Honey.

The editor of the "Am Bee Journal" published entire the remarks made in the June APICULTURIST under the above heading, and then says:

> Then Mr. Alley triumphantly asks: "Well, friends, how is that? There is nothing like being a little in advance of some other people."
>
> If the "advance guard" is sought, we invite friend Alley into our Museum, where he may find a can of sugar made from honey, which has been there for a dozen years. It was *made* by Mr. T. S. Bull, of Valparaiso, Ind., and by him placed in the Museum. Hundreds upon hundreds have examined it, and pronounced it "all right"—and excellent sugar.
>
> The only thing to discourage the manufacture of sugar from honey is *the fact* that it does not pay, and never can be made to pay! It costs too much, to place it in competition with cane sugar.
>
> It is, therefore, quite useless to throw away $5.000 to obtain a method for making it. That idea is not an *advance!* It is away behind; and so far in the rear as to be "out of sight," and apparently forgotten!

Well, Thomas, let us see about the "advance guard." I do not claim to have a "pot of sugar" manufactured from honey, but do claim that the APICULTURIST was the first bee-paper in existence to suggest and advocate such an enterprise. Get back of that, Thomas, if you can.

The idea that it can never be made to pay to convert honey into sugar is presuming to know too much. If it will pay to make sugar from beets and pumpkins, why not from honey? The opinion of the editor of the A. B. J., though good on most subjects, is not valuable upon one of which he knows nothing about. You should not get discouraged, brother Newman; wait and see if it will not pay.

Don't you slightly misrepresent the matter, friend N. when you say: "It is, therefore, quite useless to throw away $5,000 to obtain a method for making it?" My suggestion was to pay the premium to the person who would devise some means to convert honey into sugar. Of course no one supposed that it was intended to pay the small sum of $5.000 to anyone who could not manufacture sugar from honey so it could be sold as low as any granulated sugar. The readers of the AMERICAN APICULTURIST are very intelligent and I need not spend time nor take space to go into details to that extent. I guess the idea is a step in *advance* after all. Look over the back copies of your "periodical" and see if you can find anything on the subject. You are not so "previous," Mr. Editor, as you suppose. Don't claim an advance over the APICULTURIST on the strength of what somebody else has done.

I can show a sample of what appears like granulated sugar made from honey. Can produce it at anytime when hard, candied honey is at hand. [Since the above was put in type, Mr. Newman has kindly sent a sample of the sugar made from honey. If no better article of sugar can be made from honey than the sample received it would not be worth while to attempt to convert honey into sugar, even if it could be done at one mill per pound. The sample is more like the sugar in color and taste that settles to the bottom of a barrel of molasses than anything else. I would rather have the molasses-sugar by a good deal.

No, Bro. Newman, I will not claim that the APICULTURIST got the start of the A. B. J. in the manufacture of such stuff. I still claim though that the APICULTURIST did first advocate manufacturing clean, white wholesome sugar from honey. It will be done, too.]

Salt for Bees.—A writer of an item in the A. B. J. has tested the remedy given in the APICULTURIST for bees having the "shaking palsy." The author of the item referred to no doubt named the bee-paper from which he obtained such valuable information. The readers of our journal get much that is valuable and worth remembering in each issue of the paper, as the manager has had thirty years' practical experience in the apiary, and even now he may be found in the bee-yard, at least ten hours each day, actively engaged working among the bees.

It would not be a bad idea for the editors of some of the bee-papers to take a few lessons in practical bee culture. Then they might with far greater grace set themselves up as teachers. When an editor of a paper will so garble an article as to make

it read in praise of a bee-hive that it was intended to condemn, I am of the opinion that he rather overdoes the thing, and uses his correspondents not exactly as they should be treated.

The Season.—Up to May 27, bees had a very hard time, and it was only by the most careful and persistent nursing that the colonies in the Bay State Apiary were preserved. Since the above date, we have had fine weather most of the time. Now, the hives and many sections are filled with honey. Swarming commenced June 4, and the outlook is most promising. Not only have the bees done extra well as regards gathering honey; so, also, have the colonies in the matter of queen-rearing. At this date, June 11, the outlook for "good luck" in rearing queens never was better in the Bay State Apiary. Generally bees are very loath to construct queen-cells early in the season, but this year seems to be an exception to that rule, as success in that line at this time is all I could wish.

Before any queens were ready to be sent out, no less than two hundred orders had been booked for them; and, at the rate orders come in, the year 1888 will prove to be one of the best for queen breeders.

Our strain of Italians, that have wintered so well for two hard winters, are in great demand. Orders for about 1500 queens can be filled before October 1.

The month of April was a most disastrous one for bees in New England. There were but three days during the entire month when it was warm enough for them to gather pollen. In trying to do so the colonies were reduced in numbers about one-half.

The bees would start off to the fields and before they could return many became chilled and fell to the earth. Hundreds of bees, loaded with pollen could be seen on the ground. Thousands of colonies were reduced beyond recovery.

Hiving Swarms.—In hiving swarms, where the queen-trap is not used, it is best not to trouble the bees until all have settled. Then wet them with the force pump, and in the course of ten minutes shake the bees from the bough into a basket, and dump them in front of the hive the swarm is to occupy. Protect the hive from the hot sun or the bees may take a notion to desert it. Remember that the second swarm usually issues in eight days after the first. If after-swarms are not desired, the queen cells may be removed, and a fertile queen given the old colony in three days after the first swarm issues. When introducing the queens, do so just at night and smoke the bees well, and above all introduce the queen at the same time the cells are removed. If done later there is more danger of losing the queen. Read on another page of this issue what Mr. Demaree says of "direct introduction" of queens. I agree with Mr. Demaree exactly. A few queens might be safely introduced by letting them run in at the time a queen is removed. It should not be forgotten that a virgin queen can be removed and a fertile one introduced safely at the same time. Some smoke should be used, say about the same amount that is required to open a full colony of bees.

Patented Bee-fixtures.—Mr. A. I. Root owes his success in beekeeping to a patent hive, and so do most other successful beekeepers. Yet, Mr Root never forgets to give patents a rub, whether the occasion seems to demand it or not; or, in other words, Mr. Root will go out of his way for the sake of saying something against patented articles. Why this inconsistency is more than I can understand. Mr. Root has always used the Langstroth hive, and every beekeeper knows there was a patent on that hive for twenty-one years. It strikes me that I would not condemn a bridge that had carried me safely over. "Never purchase any patentable article," is Mr. Root's advice to his readers. If Mr. Root does not desire to purchase or use a patent article, let it alone, and let other people alone so far as such matters are concerned. Either stop using patented goods and those that have been patented, or else stop continual harping about such things. Throw away movable-frames, and go back to the old box-hive system of managing bees; or, if possible, be more consistent in dealing out advice to your friends. Mr. Root, of course, will not notice this. 'Tis so cunning, you know, to "pass it by silently." It is the only way some people have of getting around certain things.

Do not allow the drones from a mismated queen to fertilize pure Italian queens, as not one of the young queens so mated will produce pure progeny.

Something about Golden rod.

C. E. WATTS.

I have received a copy of the APICULTURIST and read your article on golden-rod. Being well acquainted with this plant, which I call a very valuable one to the beekeeper, I thought I would venture to write you a few lines about it which I hope will be of some interest to you and perhaps others also, for I think it would pay to plant it in any place where it does not now grow as it will thrive in any soil and location I think, but it yields more honey in a dry season than in a very wet one, though it grows well on wet land. If it were not for this plant I do not think it would pay to keep bees about here, as they get more honey from it than from any other flower. In the season of 1886 I had one colony that increased to six and gave me over a hundred pounds of honey, most all comb, and all of them had plenty of stores for winter. When golden-rod began to bloom the second week in August, the bees had only honey enough in the hives to carry on brood-rearing, or rather, they were consuming more every day than they gathered, as they always do for about two weeks at that time.

Perhaps I had taken twenty-five lbs. before but the rest was all gathered after golden-rod blossomed; the weather was fine and how they did bring in the honey! Last fall was very wet and the poorest season for honey ever known here, and we had to feed for winter. Now you can see how valuable to us this plant is as bees gather their winter stores and usually some surplus from it. The honey is very heavy and of good flavor; many about here prefer it to any other. I sold it for 25 cents per lb. It was so heavy it could hardly be thrown out with the extractor and weighed 12 lbs. to the gallon.

There are eight species of this plant here that I know of and perhaps more. The kind you have illustrated is, I think, the one that blossoms here first and is visited by bees but little. The next kind that opens is the one that is the most valuable, and I think an acre of this will yield more honey than an acre of clover in this locality. I have counted twelve bees at work on a single head of golden-rod at once. There are four or five kinds which are valuable but all are visited by the bees to some extent. Golden-rod grows all right from the seed and spreads rapidly on any land that lies idle. As to whether it would pay to gather the seed, I will say that I could save enough but don't know what it would be worth to gather a pound of it.

If you want to know anything more about this plant I should be glad to help you any way I can. Bees wintered badly in this part of the state; more than three-fourths died. Some have lost all. I lost thirteen out of twenty-one in cellar.

Rumney, N. H.

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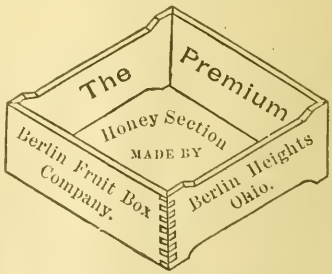

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PUBLISHED MONTHLY. HENRY ALLEY, *Manager.*

VOL. VI. WENHAM, MASS., AUGUST, 1888. No. 8.

PRACTICAL HINTS.

On the following pages will be found remarks on conducting the apiary, by the manager of the APICULTURIST, giving some of the results of thirty years spent in the apiary.

Forming new Colonies — How and when to do it.

So many colonies of bees perished last winter and spring, beekeepers are anxious to increase the apiary as much as possible the present season. As natural swarming may not be sufficient to increase the number as much as desired, artificial methods must be resorted to. With the use of foundation and sugar syrup, new colonies may be made at a small cost. I propose to increase the number in my apiary by using to a considerable extent those two articles. In some cases all the frames will be filled with foundation, and in other cases only half the frames will have foundation in them. One full colony will be divided and made two of, half the brood and honey being given to each colony. When this is done the two frames containing the most honey will be placed at the side and those frames having foundation in them will be sandwiched between those containing brood and honey. Well, there is one difficulty in using foundation in this way. If the bees are fed liberally, or if natural forage is abundant, the cells in the combs containing brood and honey will be extended or built out into the frames of foundation; thus the old combs will be too thick, while those built on the foundation will be quite thin. There is no way to prevent such work unless division-boards are used, the same as devised by the late Mr. Colvin, and were used in the Langstroth hives to compel the bees to build the combs directly within the frames.

My plan to prevent *thick* combs being built has been to open the hive occasionally and with the flat side of a wide knife, press the cells down as much as possible. If the foundation is well drawn out, the frames containing the old combs will be moved to the sides of the hive, and those having foundation in them placed by themselves. Even then it will be found that some of the cells of foundation will be worked out deeper than others, especially if there are not bees enough to cover all the frames, and here again more science must be applied or the combs will not be of a uniform thickness. The thick combs should be moved to the sides and the thin combs placed in the centre of the brood-chamber. If any project beyond the proper thickness, use the knife the same as for the old combs.

One strong colony contains a sufficient number of bees to form several new ones, that is, provided queens, foundation and plenty of sugar (or natural forage) are used. No one should think of making this operation a success without these three important factors. Nevertheless, the wise beekeeper would not attempt to make more than one new colony from one strong one, especially as late in the season as August 1, and even if but one new colony is made each should have a good queen, and foundation in all the frames. Now how can a colony be divided and each hive contain an equal portion of the bees? There are two ways of doing this. When the bees are divided one hive may be removed one-half a mile away, or the queen taken away, and both hives left near the old location as here illustrated.

1 2 3

Number two is the stand the hive stood on before the colony was divided. Number one and number three are the new colonies. Neither hive should occupy the old stand. Should they be so arranged most of the bees would return to the old location. But both colonies being placed on new stands, the bees when they come out will mark the location and return to the hive to which they belong. If this work is performed late in the day, say an hour

before sunset, the bees will miss their queen before morning and become reconciled to the new state of things. Now, if forage is plenty, or liberal feeding is done the new swarms will soon be in fine condition.

One word about cutting the foundation for the frames. Lately I have used considerable foundation and have watched closely for results. Some of the foundation was given full colonies gathering honey freely, and some to colonies rearing queens, but the result in working out was the same in all cases.

I found where the foundation was cut so as to come down within one-half an inch of the bottom-bar, that it would sag so as to touch the wood, double up the comb, and nearly spoil about two inches of it.

Such combs were removed, the bad piece cut out and the frame then placed in the hive again. Then again, if the foundation was so long that it touched the end-bars of the frames the effect was equally as bad as when it touched the bottom-bar and the combs were wavy and badly out of shape. In order to prevent bad work from sagging and stretching, the foundation should be cut three-fourths of an inch smaller than the inside of the frame. When the foundation is placed in the frame the distance should be equal from each end. That would leave a space three-eighths of an inch at each end, and three-fourths of an inch at the bottom. When thus used nice, straight combs will be the result.

Feeding new swarms.

If feeding must be resorted to (and of course it will be necessary unless there is plenty of forage in the fields) let it be done as follows: The first day or two feed a thin syrup, say one pound of water to two pounds of sugar, and place it, if possible, at the top of the hive (over the combs) and not at the entrance. If your hive has a cap, a small tin pan, or any dish that will hold one quart or three pints, will do as well as a *patent* feeder. Make a small hole in the honey-board, or whatever covers the frames, and place the vessel containing the syrup in such a way that the bees will have easy access to it. I usually make a bridge of a block of wood for the bees to climb over to the dish. To prevent the bees from drowning thin pieces of wood which serve as floats are placed in the syrup. A strong colony will remove two quarts of the syrup in one day — yes, in a few hours. If thin, it is more likely to induce comb building.

After the first few days not over one pint of syrup should be given each day.

Now we will consider that the colonies have been queenless three days, and at this stage a queen should be introduced to each. It can now be safely done by merely smoking the bees with rotten-wood and letting the queen run in at the entrance. This, also, should be done just before dark.

Making colonies, as above described, is intended to apply to operation after July 20, and from that to August 10. While colonies can be formed after the last date given, it is not safe to make them as there is not time for a sufficient quantity of bees to be bred up for winter. I have known swarms to issue as late as September 10, and to get nearly stores enough for winter, and in some cases such colonies have wintered well. Yet the wise beekeeper will not divide his colonies much later than August 10.

Beginning earlier in the season, as many as eight colonies can be made from one, and Mr. P. R. Russell, of Lynn, Mass., has been successful in doing so.

Drones — How to get them late in the season.

In my queen-rearing experience I have seen times when I would willingly pay one dollar per hundred for some pure Italian drones; in fact, I am quite sure I have been obliged to pay out more than that sum to obtain them, counting the express bills and car fare I have put out the money for. A good many years ago, when about everybody lost their bees in winter and when there were but few Italian bees in the country, I had but one *pure* Italian queen and a handful of bees to commence the season's work with. Well, it was up-hill work, but I managed to do a heavy queen business that year notwithstanding the discouraging outlook in the early spring. That was the season I had need for drones. It was necessary to keep the only breeding queen in a full colony in order to obtain drones as well as eggs for queen cells; but later in the season, when the old lady had made up her mind that she had mothered all the males she thought necessary for that year, she refused to deposit more eggs for that purpose. Well, I was in a bad fix, yet it was necessary to do something and that quickly, as the supply of drones on hand would not last long and others must be had, or queen-rearing must go to the walls for the season. This prompted me to experiment. Though all the bee-books and authors tell us that young queens would not lay drone eggs the first year, I thought they could be made to do so. In this opinion I was right. I had a colony that had just made a set of queen

cells, and as they saw the need of drones, the idea struck me that the bees had as much to do with the needs and desires of the colony as the queens. So I arranged a plan by which I forced the young queen to deposit her first eggs in drone cells. This is how I did it. The bees were removed from one of the best colonies I had, all the combs, save one, were placed in the hive again, the centre or middle comb being left out, and a nice, clean frame of drone comb was placed directly in the middle of the brood-chamber. I then placed the queenless bees in the hive and gave them a fine, young queen, one of the brightest golden Italians I could find in the hundreds of nucleus hives in my yard. In a few days I opened the hive and drew out the frame of drone comb and to my surprise and great delight, I found that nearly every cell had an egg in it. This comb was then removed to a colony rearing queens, and the drone eggs were welcomed and nursed by the queenless bees. Another frame of drone comb was placed in the hive with the young queen and more drone eggs were obtained, and thus the supply was kept up for the season with little or no trouble.

I believe nearly all the bee-books contain the statement that young queens will not deposit drone eggs the first year of their existence. This statement is handed down from one author to another, not one of them knowing that such is not a fact. Very few authors of bee-books have had experience covering all points in beekeeping, hence the reason why wrong statements and quotations are made and go the rounds.

One other experiment to obtain drone eggs resulted in a failure. I really supposed I had so arranged some combs that only drones could be reared, but the little rascals were too smart for me and my plans were upset. An old queen and several quarts of bees were placed in a hive having six frames containing drone comb only, and I supposed, of course, that the bees must rear drones and nothing else. I watched the process day by day and had the satisfaction of seeing an egg in most of the cells; the little worm or grub was nursed, and finally the cells were sealed over, but not as drone cells are usually capped with a projecting round cap; the capping was as smooth on the face of the comb as any worker brood, and worker brood was all the cells contained. Well, I was beaten, disappointed and disgusted, as well. Just then another idea struck me. I began to think I had hit upon a plan to rear worker bees as large as drone bees. The workers hatched in due time, but they were no larger than any other bees, and I had the labor for my pains, except the results of the experiment to pay me. Some one will say "why didn't the bees rear drones the same as in the first case given?" The reason is this: The bees used in the first experiment had been queenless several days, while the bees used in the last experiment had not been. Does the reader see the point?

No one can know these things without actual experience and well conducted experiments. We must experiment or be governed by theory. I like to go to the bottom of all such things, and then when a statement is made the actual facts are at hand to back them up. No author should make statements that he is uncertain about. A standard work on any subject should contain actual facts and those founded upon experience.

Finding a queen.

Many beekeepers write us that they would like to introduce an Italian queen if they could only find the one in the hive. There are several ways to find the queen of any colony. A black queen in a black colony is the hardest to find (except a virgin queen) and an Italian queen, even in a colony of golden Italian bees, is the easiest to find. The heavy, rich golden color of a large, yellow queen is easily distinguished from the small, striped bees that compose the colony.

The following is the easiest way I know of for the novice to proceed: Take a hive, exactly like the one the bees are in, place it on the ground or on a large cloth (a horse blanket will do), then place a drone-and-queen trap at the entrance of it and close any other holes the queen might pass through. Now, all is ready; smoke the bees, take out the frames one at a time and examine them carefully for the queen as they are removed; if not found, shake the bees from the comb in front of the hive on the ground and place each comb in the hive as examined. Continue to do so until all the combs are out and have been looked over. If the queen is not found close the hive and with the use of the smoker drive the bees in, and at the same time look sharp for the queen. She will, most likely, be found in a very few moments trying to pass through the metal of the trap.

I believe the above is the surest, quickest and easiest way for the novice to find a queen.

This work must not be done in the middle of the day, unless the bees are gathering honey, or robbing may be induced. Do it just about sunset. If too late to

find the queen at night she will be found on the trap the next morning. In just three days let the new queen run in.

One other method for finding a queen is to remove the honey-board, place the cap on and drive the bees up into it by gradually blowing smoke in at the entrance and drumming on the hive five minutes or more. Turn the cap over and look for the queen. If not found, place another cap on and repeat the operation.

An old queen is rather slow about leaving the brood-nest, even when the bees are well smoked, and sometimes it is necsary to drive nearly all the bees out and then remove the combs to get her.

The expert is not obliged to use the above method to find a queen. He merely blows some smoke in at the entrance of the hive to alarm the bees and in a few moments uncovers the frames, takes them out and examines each one until the queen is found. It usually requires about as much time for the expert to find a queen as it does for one to read these few lines descriptive of the method.

The beekeeper who is bound to succeed will soon find plenty of methods to do all the required work about the apiary. If one method fails he tries another.

Requeening after a swarm has issued.

This year more swarms than commonly have issued in the Bay State Apiary. Not caring to have so many old stocks queenless several weeks, all were requeened as soon as possible after a swarm came out, but no attempt was made to do so in less than three days after the swarm issued. The cells were removed to nucleus colonies, and at the same time the new queens were introduced, and so far not one queen has been lost. Thus it will be seen that only three days were lost to the bees in brood-rearing.

It is not so important to re-queen immediately later in the season as at the first of it. Our bees commenced early in June to gather honey and swarms soon began to come out. Well, now had any colony been left to rear a queen the bees would have at the end of four weeks begun to diminish in numbers and before the harvest ended there would be hardly half as many bees in the hives as there were when they swarmed. When a colony is promptly requeened there would be no great difference so far as numbers are concerned.

I am not a believer in contraction of the brood-chamber, nor do I believe in taking away the queen from a colony for any great length of time at any season of the year. Experience has taught me that a colony is always in the best condition that has a good queen, combs full of brood and plenty of young bees. A hive barren of these important requisites is nearly worthless, and unless a queen is soon put in it will be useless for any purpose.

Keep the colonies supplied with strong, healthy queens. If a queen fails to keep the combs full of brood whether there is forage or not, pinch her head off and get another. It does not pay to nurse up a colony having an unprolific queen.

Feeding back.

This is an old subject brought to notice again by the editor of the *Review*. What is meant by feeding back is this: Those who practise taking honey both in the comb and by the extractor generally have at the end of the season plenty of extracted honey and a large number of partly filled sections. Some years ago several prominent beekeepers fed back extracted honey to colonies on whose hives the partly filled sections had been placed, supposing of course that the bees would continue to store the honey fed them in the caps or boxes, as they were called in those days. No one had made a success of it.

At the price comb honey was selling at twelve years ago, it would pay to feed back and to have *all* the honey stored in sections. Now, when honey is sold at such a low figure, even if practical, it would not pay to feed back. There is a good deal of work about it and much risk of the bees robbing when feeding back is practised. Then, again, every beekeeper knows the value of partly filled sections to place on the hives at the beginning of the honey flow. Colonies having such given them will more readily enter the sections and will commence work in them several days before they will in sections having only a small piece of dry foundation in them. The only advantage in feeding back is in the fact that if the honey is all in the comb it will bring a few cents more on a pound than extracted honey. But the loss of the partly filled sections to the bees in the spring and the trouble and risk of feeding are more than offset by the small gain in cash taken for the honey.

Feeding back was practised to a small extent in the Bay State apiary some fifteen years ago. It was not a success, that is, so far as having the honey fed the bees placed in sections. We failed for the rea-

son that no honey was at hand to feed the bees the same as was already stored in the partly filled sections. It is a fact known to the observing beekeeper that bees will not mix honey in the cells. They will store buckwheat honey in one cell and in an adjoining cell may be found clover or basswood honey, but never two kinds of honey in the same cell. Well, the boxes placed on the hives to be finished were nearly full and needed but a few ounces of honey to finish them, so the honey fed the bees was all placed in the brood-chamber. After feeding a while with no apparent gain in the sections, the hive was opened and nearly every comb in the brood-nest was solid full of honey. The experiment was given up and never has been attempted again in the Bay State apiary.

Some queer things about bees.

I have a number of queens in cages that are used in the yard as decoy queens. These queens I do not feed nor take any care of except to shelter from the hot sun and cover up when it rains. The cages are placed on a hive, or upon the handiest object, when I am done with them for the time. As soon as left, the bees find them and furnish the food and take all the needed care. Some of the queens have been used in this way for nearly a month, and they are very bright and lively and will stand it for a month yet.

Bees do not seem to notice a virgin queen; yet if they are deprived of one, they seem to miss her and feel as bad as though she had been a fertile queen.

I have watched the worker, queen and drone bees when they seemed to be struggling to emerge from the cell, and though they had hard work to crawl out, the bees would not offer the slightest assistance nor would they take any notice of them; but should one of those bees die in its attempt to leave the cell the bees would at once remove it. Rather poor judgment in the bees.

Should a bee be born with defective wings he is at once invited to go outside the hive, as his room is more valuable than his company. This seems heartless; yet a bee without wings is of no account. "The survival of the fittest" seems to be the motto of the bee.

When a bee goes and finds some honey after the general harvest is over, on his return home he makes known the fact to his companions that he has it by shaking his whole body as though trying to remove some dirt from his wings. If more stolen sweets are to be had at the same place, the bee quickly unloads and starts for more plunder, and at the same time several other bees will follow. By the time three or more bees have loaded and returned, the whole colony begins to become excited and in a very short time the roar of the bees indicates that something is wrong in the apiary. By following the hum of the bees the apiarist can easily find the mischief the bees are about.

I should have said in the beginning that when the first bee returns loaded the other bees seem to detain it at the entrance and try to make him tell where he obtained the stolen property.

Excessive swarming how prevented.

This query was answered in a bee-paper not long since. Not one of those who answered had or seemed to know of any definite plan or method to prevent it; and, as is usual in answering questions in some of the bee-papers, there was not one particle of information to be derived from the replies given.

Our method of preventing excessive swarming is this: First use a queen-trap on the hive, let the bees swarm as much as they please and there will be no special need of troubling them except to take the trap away and put another on in its place. Three days after the swarm issues open the hive and remove all the queen cells and at the same time let the queen that led off the swarm run in the hive again. This has been practised in every case but one where a swarm has issued in the Bay State Apiary this year, and not one has come out the second time. It is a success and as practical as any method given.

The idea that giving bees a large amount of room prevented swarming was exploded years ago. The swarming impulse, or fever as it is called, must be satisfied before the bees will give up the idea and settle down to business. The only prevention of swarming is to let the bees swarm and fix the matter with them afterwards. Non-swarming hives have not been found, and Simmins' non-swarming system has not proved a success, and no arrangement devised by man has prevented bees from swarming. For controlling swarming, there are some practical methods in use.

Bee-veils.

Do those who wear bee-veils know that sooner or later the eyes will be badly damaged thereby? The constant straining to the eyes looking through the fuzzy meshes of a cloth bee-veil is very trying. Throw away the veil and use a good smoker and no one will get stung while handling the largest colony.

Where shall partly filled sections be kept? also brood-frames filled with honey?

There are at the present time several hundred of unfilled sections in our apiary. Just where to keep them has puzzled us for some time. They will be placed on *strong* colonies and tiered up about six sections or cases high, and protected from the weather. The bees in a strong colony will preserve the combs from the moth and also keep the uncapped honey from souring in at least 250 sections. Possibly, the bees may remove the honey from all the combs; if they do, so much the better. Later in the season, if there is a good flow of honey, the cases can be replaced again on the best colonies. The advantage of this plan is this:

If a set of sections is left on each hive the combs will be badly discolored by so much travelling over them and the bees clustering upon them. By the way, I hardly think the combs are discolored by the bees travelling over them, nor can I explain just what does give the white combs a yellowish cast; yet it does not seem to me that the bees do it with their feet. When tiered up, as suggested above, but few bees will be in any one of the sections at any one time.

Keeping brood-combs.

Just at this time I have quite a quantity of brood-combs filled with new honey, but all the cells are not capped. The uncapped honey is likely to sour and the moth liable to attack them on account of the pollen in some of the cells. I know of no better way to preserve them than to put the combs in hives having no bottoms and tiering them up on strong colonies the same as advised to do with the sections, say about three combs high. These combs are some that will be used later in the season, either to feed some of the stocks that have not quite honey enough to winter, or to form new colonies. However, used, they must be protected from the moth and the weather during dog-days. If the colony is a strong one on which the combs are placed, much of the uncapped honey will be capped, though the bees will be in no hurry about doing it.

Do bees know a stranger?

"Won't these bees sting a stranger? They are flying all around my head but I don't see any about yours," is the remark nearly all visitors make who go among the hives in the Bay State Apiary. Yes, bees will sting some strangers, but not because they are strangers, but because the dress of a stranger is new and seems strange to them. Then again, nearly every person who visits our apiary wears a felt hat and most all wear dark, woolen clothes. The material of the hat and clothes is somewhat fuzzy, and the coloring in the hat has a smell about it that bees do not like.

The beekeeper when he goes into the apiary usually wears a certain suit. Most of them wear a straw hat and are in their shirt-sleeves. Bees will get accustomed to such an object moving around among the hives. While they do not recognize one person from another they seem to know a straw hat from a felt hat. When going into the apiary with a dark hat on I am quite sure to get a dig from some bee, and if I do not retreat at once half a dozen bees will be flying about my head. I then go for the old straw hat, and when the bees see that they say, "all right, friend, pass," and there is no more trouble from stings.

Never attempt, if the weather is hot, to handle bees with anything on your head but a straw hat.

Honey-boards and contraction.

No honey-boards or queen-excluders of any kind have been used on any hive in the Bay State apiary the present season between the brood-chamber and the section cases above. Not one section has been spoiled by the queen depositing her eggs in them, and not one of our hives has been used on the "contraction" system of obtaining comb honey; all the hives have the same number of frames and combs they had in the winter. I do not believe that there is a beekeeper in America who practises contraction and queen-excluding who has raised more comb honey to the colony in the same time than has been done in our apiary the present season and by those who use the Bay State hive.

The editor of the *Review* criticised our remarks on the subject given in the APICULTURIST, some time ago of honey-boards and queen-excluders and wanted to know how we would keep the queen out of the sections if we contracted? We do not contract, my friend. A much better system is in use in the Bay State apiary; nor do we have and never did have any sections spoiled by the queen entering them, and I venture to say that we can get as much honey to the colony by our method as can be raised by the "contraction" system. By our method, when the season is over, our colonies are strong, all have plenty of bees and brood and a good queen. Why is not a frame, well-filled with honey and brood as good a dum-

my, as a wooden one? Does not every body know who keeps bees that there are several days during a good honey season when there is not half empty cells enough in a hive for the bees to store the honey in as fast as they can gather it? Who is so blind that he cannot see the advantage in having a few spare combs in the brood-chamber at such a time?

Brother Hutchinson says the bees do not "loaf" in the two spaces that are made when a honey-board is placed on a hive. What do they do then, Brother H.? They are there all the time and if you will use a glass hive to observe the bees you will find they do not move around much. I would much rather have an 8-frame hive with no honey-board than a 6-frame hive with a honey-board. With the former there is no loafing room and the sections are brought nearly an inch nearer the brood than it is possible to do with the latter.

Many beekeepers have felt the need of a hive that can be used without a honey-board and at the same time one that the queen will not be induced to enter the sections. I believe the Bay State hive is the one. At any rate, I desire a report from all who are using them on this one point: Has the queen entered the sections? Some very flattering reports have come in which will appear in later issues of the APICULTURIST.

What shall we do when a person is badly stung?

When a person is badly stung, something must be quickly done to relieve the pain, prevent the swelling and any bad effects of the poison taken into the system. What will prove a remedy in one case will have no effect in another. Kerosene oil, spirits of turpentine and spirits of ammonia are all good.

A few miles from my apiary, there are several hives of bees over which a shed-roof is built. Directly over this shed is an early apple tree. One day two small boys got upon the bee-shed to get some of the nice fruit. This disturbed the bees and they soon found the boys. One of them had the good sense to jump and run, but the other stood and was badly stung, and no doubt would have been stung to death had not a person who happened to be passing at the time rescued him. There was near by a large trough of water used for horses, into which the boy was quickly plunged, thus preventing further stinging and which prompt action probably saved his life.

Such a simple and ready remedy as a quantity of water is not always at hand though cold water is one of the best things to apply in a case of severe stinging. For one, or for two or three stings, the first mentioned remedies are all that is required.

Persons who have a bad humor in their systems are the ones who are most badly affected when stung by an insect. Such people should not attempt to handle bees without a good pair of rubber gloves and a good bee veil.

How to keep a queen several days after she is received by mail.

Many of those who purchase queens do not seem to know how to keep them until they can be introduced. If the queen is received in good condition the cage may be placed over a colony (one having no queen is best) in this way: Make an inch hole in the honey-board or arrange it in anyway so that the part of the cage having the queen in can be so placed that the bees in the colony can get at it and feed her through the meshes of the wire cloth. Not only will the bees feed the queen, but she will remain perfectly quiet all the time while thus confined.

Prepare for winter.

Bear in mind that the month of August is the time to prepare bees for winter. Early in the month see that each colony has a good queen and plenty of brood. The first of September do all the necessary feeding, and by October do all the packing that is to be done.

No packing is done between the hives in the Bay State Apiary. I do not want any mouldy combs and do not get them when no packing is done. I find that the bees winter much the best where the hives are only packed over the frames. The dead-air space between the outer case and brood-chamber is not air-tight, nor do I want it so. Theory, like some other things, is good in its place, but experience is the best criterion to be governed by. When I put saw-dust, chaff and other such material between the hives for packing, the combs moulded and the bees wintered badly. There are many disadvantages in using chaff-packed hives. Who can say that packing is of the least advantage? What is the advantage of winter packing, anyway? I believe in *spring* packing, as in that case bees can be kept very warm as brood-rearing is going on which acts almost like a small stove in the hive. When bees are not brooding,

the combs are as cold as stone. The bees need to be kept from the dampness and cold. That can be done without any packing around the hive. Place a cushion of finely cut hay over the frames, and if the bees are in a double-walled hive, they will winter nicely if the store of food is wholesome, and in abundance. Then place the hives two feet above the ground and the bees will be pretty sure to winter.

A hive that needs so much packing as some do for winter are worthless. The Bay State Hive needs no extra labor to prepare it for winter. The sections are removed, a mat is put on the frames and the only other packing is merely a cushion which requires little or no time to place in the cap. These hives are as easily unpacked as packed; all that is necessary to do is to remove the cushion and place the sections on. (The cushions are not removed till the sections are put on.) I believe in keeping up the temperature of the hive until the sections are ready to put on; then contract the entrance and force the bees to take possession of them at once. When the bees are inclined to "lay out," then give more room at the entrance. At night, if liable to be cool, the entrance should be contracted again, so that the brood-chamber will not cool off, and thus drive the bees out of the sections.

There are lots of little things connected with beekeeping which if attended to, would very much increase the production of the apiary. It pays to attend to the little details.

Best time of day to work on bees.

In many of the operations described in the APICULTURIST, I have advised doing the work just before dark. I will give some of the reasons why that time of day is best to operate. 1. The bees are not as liable to rob as they are earlier in the day. 2. If the combs are slightly broken, or a little honey is dropped upon the ground, it will not set the bees to robbing as it would earlier in the day, as the disturbed colony would be in condition the next morning to defend their combs. 3. It is well-known that bees keep very quiet in the dark. A colony made queenless in season to miss her just before dark would keep quiet until daylight returns, when they will make a search for her. But after being queenless all night they soon become reconciled and quickly quiet down. No matter what the operation is, the bees need time to recover from it, and when they have the night before them there is no loss of time.

Robber bees.

Care should be taken in season to prevent robbing in the apiary. The most danger is during the first few days after the honey flow ceases. The bees at once commence to look around for the weak colonies, or any exposed sweets. Keep all honey out of reach and smell of the bees. Remember that a "stitch in time saves nine."

Should the bees get into the bee-house, the best plan is to fasten them in. Let out just before it is too dark for them to find the hive. This will do more towards breaking up robbing than any other plan I know of. A few bees will return in the morning, but they will soon become discouraged and give up.

How to know when robbing is going on in the apiary.

When robbing is going on in the yard I generally know it without going into the apiary. An occasional stray bee will come into the office where I am writing. The hive attacked is closed with a wire-screen to give ample ventilation. If but few bees have got at it, I manage to kill them with a piece of thin wide board.

After the bees once become engaged in robbing they are of no use in the apiary, as they will continue to steal during the rest of their lives, and the sooner they are disposed of the better. If much robbing is going on in the apiary, the thieving colonies should be found and removed to a new location, at least, a mile away. By sprinkling flour on the robber bees as they leave the hive being robbed, they can be easily traced to the stand where they belong. I have often broken up a colony which were robbing by blowing tobacco smoke in their hive. When this is done, care must be taken that the other colonies do not turn to and rob the one that has been doing the robbing.

Combs melted down.

Several parties have written us concerning colonies whose combs have melted and broken down on account of the excessive heat. The best thing to do under the circumstances is to move all the bees as quickly as possible to a new hive. When it is hot enough in a hive to cause the combs to break, the temperature is sufficiently high to destroy the capped brood. Therefore, it is a waste of time and trouble to undertake to save the combs. If combs break down when the bees are gathering no honey, the hives should at once be moved to the bee-house or cellar, or robber bees will soon get the upper hands.

The wax-moth.

I believe it is possible to exterminate this pest of the apiary. No old combs should be allowed to become the brooding nest of these insects. Clean up and melt all old worthless pieces before hot weather comes on. Keep those combs that are to be used again in a cool place, where the temperature does not reach a point high enough to hatch the eggs, and my word for it, there will be no millers to propagate that species of insects. Combs can be kept in a dry, cool cellar, and will not mould.

The wax-moth is not a native of this country, he is a foreigner, and like the chinamen, should be made to go.

Infuse new blood into the apiary.

I am one of those who believe in infusing new blood into the apiary each year. This can be done by purchasing a few queens and replacing the oldest in the yard, and should be done yearly, whether the new blood is needed or not. Our strain of hardy Italians would give vigor to any apiary. Try them.

I am prepared to ship queens by return mail, at the following low rates: One queen $1. Two, $1.75. Three, $2.25. Purity and safe arrival guaranteed. If anyone gets a queen that is in any way unsatisfactory, all such will be replaced by return mail. We are bound that every one who deals with the APICULTURIST shall get the full value for their money, and that everything shall be satisfactory in all respects. All money sent here will be returned on demand.

Black bees vs. Italians.

It was Mr. Langstroth who first discovered that it was more difficult to dislodge Italian bees from a comb than it is black ones. I find this the case, and when I have occasion to shake Italian bees from the combs, I always think of Mr. Langstroth. The black bees covering a frame can all be shaken off with one sudden jar, while it is almost impossible to dislodge all the Italian bees from a frame of brood. This feature is an advantage in some cases, and at other times it is a disadvantage. I often have occasion to remove all the bees from the combs and always am obliged to use a small broom to get about half the Italians off. This, of course, requires considerable time.

"Two beauties."

Glastonbury, Conn.

MR. ALLEY: Herewith find $2. Please send us two more queens. The two received are beauties. T. H. L. TALCOTT.

Spring dwindling.

The cause of spring dwindling does not seem to be well understood. Why it is that some of the most prosperous and hardy colonies the year previous will dwindle in numbers after passing through the winter, apparently in good condition, may not ever be known. Is it for the want of pollen in the spring to furnish the bees vitality? This seems reasonable, yet it is not quite satisfactory.

One of the best colonies in the Bay State apiary, in 1887, came through the winter in fine condition and with about as many bees as it had the fall previous. The bees did not seem to have any inclination or desire to take a flight at any time, yet this colony having a queen reared under the swarming impulse (which some people claim are the best) dwindled down to half a pint of bees, and did not commence brood-rearing until a frame of brood was given them from another colony. That weak colony is now one of the best in the yard. The fault was not in the queen; had it been she never would have brought the colony up, even with the aid of the frame of brood given them. I do not believe there is a person in the world who can correctly state why this colony failed to come up without help.

Owing to the failure of this colony several experiments have suggested themselves to me which will be tested another year, and, if possible, experiments will be tried, looking to a prevention of spring dwindling. If successful, the results will be given in the APICULTURIST.

Of course it is understood why a colony dwindles that was not in good condition the fall before, or one that has an inferior queen. But why a healthy colony, one strong in the spring, should dwindle, is a matter that needs investigation. If pollen will furnish the needed vitality, of course that can be easily supplied.

Introducing queens.

Those who receive queens from the Bay State Apiary can use the cage the queen is shipped in as an introducing cage, all the change that need be made is to turn part of the wire back that covers the food, and the bees of the colony to which the queen is introduced will soon remove the food and release her. Of course, the cage must be placed where the bees can get at it easily. The best way to do is to take out a frame and insert the cage in one corner at the bottom. One great point in introducing is in having the bees perfectly quiet when they first meet the queen. This is the secret of success.

Forming nuclei.

A reader of the APICULTURIST wants to know if any issue of our journal contains instructions for forming nucleus colonies. Some two years ago I gave directions for doing such work; but we now have so many new readers I will describe the process again. For many years I used a one-frame nucleus in my queen-rearing yards and with good success. A person who desires to rear but a few queens will find such a hive all that is needed. They can be made in this way: Take a full hive of bees and make as many small single-comb colonies as there are frames of brood, giving to each one an equal portion of the bees. Give the hives plenty of ventilation and place them in the cellar for three days and supply each with plenty of water. At the end of three days, towards night, give the bees a chance to fly and then introduce a cell or a queen. The cell can be placed between the comb and hive at the top, and no cutting of the combs need be done. Let the bearing come against the base of the cell.

By confining the bees seventy-two hours, very few will return to the old location when first let out. As the nucleus hives cannot be placed on the old stand, it is necessary to give them a new location.

Queenless colonies—How to know it.

There is no way to know that a colony is queenless by outside appearances during the first few weeks after the loss of the queen. The only way to know certainly is to open the hive and make a thorough examination. If no eggs or brood is found in the combs, that would not indicate to a certainty that the colony does not have a *virgin* queen. To know certainly that the colony has no queen of any kind, a frame of brood should be given the bees, and if they are queenless, an attempt will be made to rear one from the brood given them, and that is the time to introduce a fertile queen.

If a colony has been without a queen a long time, it is an easy matter for the experienced beekeeper to know it. When passing through the apiary, if a colony does not seem to be working as well as the others there must be something wrong. A queenless colony will carry in more or less pollen, but it does not work with that vigor that those colonies do that have queens or those that have been without a queen but a short time. Bees work just as well the first few weeks after being deprived of their queen as they did before she was removed. The only positive way to know that a hive is queenless is to investigate as above stated.

How many frames to a hive.

It used to be thought that ten L. frames were about the right number for a hive 14⅛ inches wide. But now eight frames, Langstroth size are considered sufficient, or about the right number. None of the hives in the Bay State apiary have over eight Langstroth frames and several have but seven frames, and I think I get the best results from the latter. Not only do they build up more quickly in the spring, but they are somewhat on the system of contraction without contracting any hive for the purpose. I am positive that the 7-frame hives winter better than those having eight or more frames. Then it has sometimes seemed to me that there are more bees in a 7-frame hive than in those having eight or ten frames.

Late swarms—How to treat them.

A swarm that comes off after August 25 is about worthless, unless one has combs to place them on; even then it would be much the best plan to return them to the parent stock. Should any late colonies issue in our apiary, we would do just this with them: they would be hived in a common box of some kind. Three days later the queen-cells should be removed from the hive the bees came from and the swarm returned. The usual amount of smoke required to open a large colony would be used in the operation, much of which should be blown into the old hive to prevent the bees from fighting or killing the queen. This is an operation that should be done just before dark.

Queenless colonies—How to treat them.

A colony that has been queenless four or five weeks or longer should have a frame of capped brood given them at the time a queen is introduced. Unless so treated, the colony would be badly reduced in numbers before any young bees would hatch. By the time the young bees began to emerge the combs should be full of brood. The colony then would increase very fast. It is more difficult to introduce a queen to a colony that has been queenless a long time than it is to one that has been without a queen but a few days.

When to supersede old queens.

No queen should be kept over two years. A queen may have been the best in her second year, and in the third season prove to be worthless. Keep your colonies supplied with young queens, that means success.

Space around brood-frames.

I believe that nearly all who make bee-hives allow three-eighths to one-half an inch space around the frames. This space is too large. Only a bee space, and that is less than two-eighths of an inch, should be allowed at the rear end of and over the frames. If more than one-fourth of an inch is allowed it is certain to be filled in with comb and honey. More space can be given at the front end of the frames, say three-eighths of an inch, and the bees will not run the comb through the ends of the frames to the front of the hive.

The Bay State Hive has but three-sixteenths of an inch space between the top-bar and honey-board, or section-rack above, and not one of the colonies fastened the top of frames and section-rack together, notwithstanding the fact that the top-bars are but one inch wide.

The end bar or vertical piece of the L. frame should not be less, and I do not think it should be much more than seven-eighths of an inch wide. If not as wide as seven-eighths of an inch, the bees will run the combs through and fasten to the back end of the hive; if wider than seven-eighth of an inch, the frames do not seem to handle well.

The top-bar for a Langstroth hive should be one inch wide, and if one-eighth of an inch wider it is still better. Any top-bar less than an inch wide is a nuisance of the most intolerable kind in any apiary. Those who use a seven-eighths top-bar know how they work, and I need not state it here. Those who use a wide top-bar frame know that the bees do not fasten everything so firmly that a chisel or a lever of some kind must be used in order to get a frame out.

Disposing of honey.

One who has anything to sell must watch his chance and take every advantage of the market. I have a brother who carries the mail between the Wenham station and a summer resort. The idea struck me that that would be a good place to dispose of some of my honey. One day I gave him a package to show the people, and the result was I found quite a sale for honey. He gets twenty-five cents per pound for it and I allow five cents' commission for selling it. You see we both make a good thing out of it, as it requires no extra time or labor to do the selling.

You who have honey for sale should take a sample package when going "to town" or wherever you go, provided the honey can be taken as well as not. In this way you can do your own advertising, and at the same time take orders to fill when going that way again. If there is much passing of teams by your residence, just stick up a "shingle," stating that you have pure honey for sale, and you will be surprised to know how many and how well people love honey.

Getting bees out of sections.

Several cases of sections were removed from the hive just before sunset and placed in the bee-house. A cage containing a queen was nailed in a box and the box was then inverted on the cases which were standing on one end. In the morning every bee had left the sections and most of them were quietly clustered on the queen cage; the box was then placed out of doors, the queen cage removed and the bees returned to their respective hives. Had it been convenient or desirable to form a new colony just then, the bees could have been utilized for that purpose.

I find the bee-house, having but one room and so built that no bees can enter or get out through cracks in the door or window, one of the best places to put the sections when removed from the hive. I have a window in the door of my bee-house; the bees leave the sections, and cluster thereon to get rid of them and at the same time let no robbers in, the door is opened and the bees take wing with a rush. Any room arranged as above will do as well as a house for that special purpose. The best methods for keeping comb honey, as practised by the largest bee-keepers has been described in the back numbers of the APICULTURIST. I think it would be best to get all honey in the hands of the consumer as soon as possible after it is removed from the hives.

Introducing queens to artificial swarms.

I am interested in an out-apiary and lately have been dividing some of the colonies. Not having the time to go to them every day, I introduced the queens direct in cages by this method: The queens were put in cages like those illustrated and described on page 235, *Beekeepers' Handy Book*. The cage was then inserted in one corner of one of the brood-frames for the bees to remove the food and release the queen. This method has been tested in the Bay State apiary and worked satisfactorily. It will take the bees, at least, two days to remove the food and liberate the queen; by that time they will be pretty well acquainted with her.

Bee-papers.

It really seems as though old beekeepers do not, to any great extent, take the bee-papers. Of course, the old beekeeper thinks he knows it all and there is no need of the "useless" expense of a bee-paper. This is a mistake, friends; you should all take one or more of the bee-publications and thus keep yourself posted concerning what is going on in the bee-keeping world. Something new in the interest of beekeeping is coming to light each day, and there is but one way to keep posted, and that is by reading the bee-papers. Then, again, every beekeeper should not only read the papers; he should write for them as well, and thus do his part towards making such periodicals interesting. The best, and in most cases, the most valuable and interesting articles come from the practical beekeeper. We invite all the readers of the APICULTURIST to send us short articles for publication.

It is the novice and the beginner in bee-keeping who subscribe for bee-journals; that is, we judge so by the questions that are received every day. We take pleasure in replying to queries sent to this office. Do not be afraid to ask them, as it is apart of our business to answer them. There is but one way to get the most information and that is by asking for it.

A queenless colony.

Gaylordsville, Conn.

I have a hive that has lost its queen. How shall I introduce a queen to it?

F. D. FLYNN.

Reply.

If a queen can be obtained before any of the young queens hatch, the cells should be destroyed and the queen given to the bees at once. If one or two of the cells are open, let the bees alone for a day or two; then examine the combs, remove the young queen and introduce the fertile one at once, and she will be kindly received.

Chicago, Ill.

MR. ALLEY.

Dear Sir: My bees have built out the cells in some of the brood combs about six-eighths of an inch wider than the frames. Ought I to shave the combs down so the cells will be the usual depth?

2. Are the leather-colored Italians any better than the light-colored ones?

J. F. BARTON.

Reply.

1. Is replied to on another page. 2. I do not think there is any difference, provided both strains are reared with the same care. I cannot see what the color can have to do with the fertility of a queen. The leather-colored queens are most likely to be impure.

Queen-rearing

One would hardly think it possible for a person who has been engaged in queen-rearing thirty years to find or learn anything new in that line; yet such is the fact. In the "Beekeepers' Handy Book" we gave a method for confining bees ten hours in a queenless state. That seemed a long time, especially on a hot day, to keep a large colony of bees confined in a small box, though the box had plenty of ventilation. I have experimented in various ways to obviate that feature in my method of rearing queens and can now say that after much experimenting I have found a plan that works perfectly, and one that obviates the necessity of keeping the bees queenless even two hours.

One reason why the bees were kept queenless so long was because the eggs given them for cell-building would be destroyed if given the bees too soon after taking their queen away. That difficulty has also been overcome. Now, the bees are kept in a queenless state just long enough to have them become aware of it, and that requires from one to two hours. When the eggs are given them, queen-cells are at once commenced and not one egg is destroyed.

By the old method the bees were put in the box in the morning and kept confined till near sunset. Now, the bees are placed in the box at any time in the day, and in less than two hours they are released and are building queen cells and seem as happy as can be. This new plan is a great advantage over the old method. and as the three editions of the "Handy Book" (3,000 copies) are nearly all sold, and as I have so much that is new to make public on the matter of queen-rearing, I propose to rewrite entire a fourth edition of my book and all will be printed in the APICULTURIST, after which it will be stereotyped and appear in book form.

The work will be begun this fall and the readers of our bee-journal will get well paid for the money sent in for subscription. Subscribe now.

A backward spring.

Our orders for queens have not been filled as promptly as I hoped, owing to the backward spring. However, I am now up with all received previous to

Aug. 1, and am ready to take subscriptions for the APICULTURIST and send one of those fine, golden queens by return mail.

The season.

As is usually the case, in some parts of the country bees have done well, while in other sections but a small amount of honey has been secured.

I have kept bees for thirty years and in no season have raised so much honey as during the present one. In fact, I never tried to raise honey before, having made queen-rearing my whole business. The weather is now (July 10) too dry for the bees and the height of the season has past.

Last year I commenced to feed as early as May 1. This season no feeding had been done previous to July 15 in the Bay State apiary. All my hives are full of honey and no feeding will be necessary this year.

Wintering bees on dry sugar.

The editor of the *Bee-Hive* pokes a little fun at the manager of the APICULTURIST on account of the prediction made regarding feeding dry sugar for winter stores. He says "The following article may be behind the times. It was published in the British Bee Journal about seven years ago, but it expresses our opinion completely." Well, Brother Cook, if you really supposed that I proposed to feed dry sugar *only*, I must say that you are rather sleepy and way behind the times. Because such an attempt was a failure in England several years ago, it is no reason why it will fail here. Then, again, I will inform the editor of the *Bee-Hive* that dry sugar feeding has been practised and made a success in England, and within three years, too. We will show, by and by, how it is done here in the United States. Have patience, Brother Cook, and you shall know all about it.

The National Beekeepers' Union.

The third annual report of the General Manager of the National Beekeepers Union, for the year ending June 30, 1888, has been received. In another issue extracts of the report will be made, as space is all taken this month. The election of officers will take place August 1. Every bee-man in the United States should join the Union and help bear the expense of the suits brought against beekeepers. The proper papers and full particulars for becoming a member can be had of Mr. Thomas G. Newman, 925 West Madison St., Chicago, Ill.

For sale.

Mr. C. A. Briggs of Dighton, Mass., has several colonies of bees for sale. Please write to him for particulars.

Something about the price of queens.

I once paid $20.00 for a queen and lately paid another man $3.50 for one. Both queens were satisfactory and well worth the money. Now, I propose to send the APICULTURIST one year and a better queen than either of the above for $1.50.

Aug. 1, we expect to have 400 select and tested queens in nuclei ready to mail on demand. Now is a good time to subscribe and secure one of these fine queens.

Purity and safe arrival are guaranteed in all cases. If introduced by the method given in a late issue of the APICULTURIST no one will lose a queen in introducing. If you do not understand or even if you have any trouble to find a queen you are referred to the method given on page 151 of this issue.

The queens sent out from here are guaranteed to live, with proper care, three days in the cage in which they are sent. This will give all a chance to introduce them by the seventy-two hour method.

Expiring subscriptions.

Subscribers will please not forget that no APICULTURIST will be sent beyond the time paid for, except by request. The best way for all to do is to renew promptly. If not convenient to remit at the time, the journal will be continued if you will just make known your desires on a postal card.

Do you want a fine queen?

Send us three new subscribers and $2.25 in cash and get one queen free by return mail. We have the queens and shall be glad to get an order from every reader of the APICULTURIST.

Fine articles.

No one must suppose there is no material in our office that we could have used because the manager has filled this issue of the APICULTURIST. Such is not the fact. In the September number of our journal will be found some of the best articles ever published in any paper.

For sale.

The drone-and-queen trap is now well established, it having been patented in 1884. I now wish to dispose of all the territory outside of New England. Any one desiring to invest in this enterprise will learn of the terms by applying to the manager of the AMERICAN APICULTURIST, Wenham, Mass. The terms will be easy.

Notice to our debtors.

If our friends who are owing us will kindly forward the amount due we shall appreciate such an act of kindness. We are sadly in need of the money due us.

A splendid offer.

Any one who will send us three subscribers and $2.25 in cash will receive, by return mail, one of the fine selected queens reared in the Bay State apiary.

Our price list.

While we don't use the columns of the APICULTURIST for our own advertisements, yet we keep in stock all supplies needed and used by beekeepers. We have an eight-page circular and price-list that will be mailed free to any address. All our supplies are of the best quality, and our prices are as low as the lowest. Send for catalogue.

Visitors to the Bay State apiary.

I am always glad to see my friends, and all who desire to visit the Bay State apiary are welcome to do so at their pleasure. The only condition is that you send a postal card a few days before the visit is intended to be made, in order that I may be at home to meet you.

Don't forget.

Please do not forget that the APICULTURIST is but 75 cents per year, and, also, that each yearly subscriber can get one of our fine warranted queens by remitting 75 cents more at the time the queen is needed.

Granulated sugar from honey.

The editor of the *American Bee Journal* seems to have lost his head and took occasion to misrepresent us in his issue of July 14. In noticing our remarks in the June APICULTURIST, he says: "the facts remain all the same." So they do, Brother Newman, and every reader of the APICULTURIST knows what the facts are.

Prevention of increase.

A new method of "Prevention of Increase" will soon be presented in the APICULTURIST, by one of the best known practical beekeepers in America.

Advertisements.

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MAINE.

E B. Leighton, Falmouth, supplies and breeder of choice Italian and Carniolan queens.

NEW YORK.

J. Van Deusen & Sons, Sprout Brook, Mon. Co., flat bottom comb foundation, wholesale and retail.

ILLINOIS.

F. A. Snell, Milledgeville, Carroll Co., Italian bees, beehives, sections, extractors, veils, smokers, comb foundation, etc.

MICHIGAN.

A. J. Cook, Lansing, Pub. Cook's Manual, or Bee-keeper's Guide.

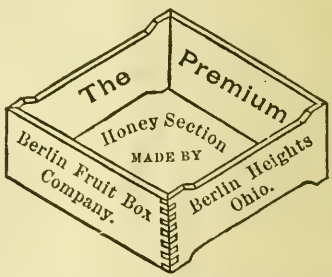
OHIO.

D. A. McCord, Oxford, Butler Co., Bees, queens and poultry.

C. F. Muth, 976-978 Central Ave., Cincinnati, supplies.

INDIANA.

H. G. Frame, North Manchester. Bees, Queens.



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THE AMERICAN APICULTURIST

A JOURNAL FOR THE NOVICE AND EXPERT.

Devoted to Best Races of Bees, Best Hives, Best Implements and Best Methods of Management to make Beekeeping a Success.

PUBLISHED MONTHLY. HENRY ALLEY, *Manager*.

VOL. VI. WENHAM, MASS., SEPTEMBER, 1888. No. 9.

Surplus Honey Production in Great Britain.

W. B. WEBSTER.

IT is interesting to note the various methods of bee cultivation in vogue in the numberless countries of the habitable globe, from the peculiar system adopted by the uncivilized tribes inhabiting the banks of the Congo where, in rush baskets suspended on the branches of the trees, these savages locate their stocks and swarms, to the bar-frame hive of America or Britain and their extensive—in America—massing together of almost unlimited numbers of colonies and where beekeeping has now become a science, studied and examined by its devotees in all its multifold phases; but it is only to a portion of this science that I am now going to call attention and draw comparisons, notwithstanding the English proverb, "Comparisons are odious," ofttimes written by me in my copy book years ago when at school. Yet I would fain cease writing if I thought that any of my American brothers in the bee craft would for one moment suppose that I meant any of my comparisons to reflect to their detriment, or hurt their national sensibilities.

"Supering" as practised in Britain is in many cases so differently executed from the same in America that the divergent characters of the two people are exemplified even in this minor industry. In America the question is invariably asked, by anyone about to make a venture in any productive enterprise, Will it pay? Will the dollars that I am about to invest bring back their equivalent and something extra? Such will always be the question asked where the ruling passion of any community is trade. Here in England we have many, in fact by far the greater number of beekeepers who keep a few stocks of bees simply as a pastime and not as an addition to their incomes; these people make the question of profit quite a secondary consideration, although this description of beekeeper is gradually falling out of the ranks and the far-seeing trader stepping in to fill up the gaps left by his easy-going conpatriot.

It was not until the advent of the bar-frame hive that the production of honey, as a business, at all attracted the attention of the Americans. They could get what little honey they at that time wanted, from the bee hunters or their agents. A few bee gums were kept by farmers and others, I suppose a sort of reverting back to their ancestors who, in the old farm in England, had had their two or three straw skeps ornamenting the lower portion of the garden wall. Honey then was not obtainable in a salable form. It was unattractive and not produced in differing quantities to make it a trading commodity of any magnitude; but as soon as the frame hive entered the arena the American seized on the idea at once and went in "big" for it, making a business at once and counting the dollars as they flowed into his ever ready hand. Not so the phlegmatic Britisher—he wanted to see whether it would answer and even when it was shown by the pioneers (not traders) of British beekeeping that it was an industry that would pay, he was slow to avail himself of the opportunity offered to him; in fact, after all these years, there is not at the present time a single beekeeper in England who entirely relies on his honey production alone for a living and the number of beekeepers owning over eighty stocks could be counted upon the fingers. When the production of comb honey (sectional) had assumed, in America, gigantic proportions in proportion to the time elapsed since the introduction of the same, the ordinary British beekeepers were only just commencing to be alive to the fact that honey could be packed by the bees in salable and attractive parcels. Not that they were quite unaware of this, as many of the pioneers had, even before the Americans, provided their bees with separate removable receptacles similar to sections and had conclusively shown that such articles of commerce could be produced at a fair profit to the producer; but John Bull was, as usual, obliged to feel

his way very carefully and instead of at once utilizing the idea, he advanced cautiously and provided the bell glass, an appliance I should think almost unknown in the States, as a first step. This appliance is a bell of glass placed over a hole in the crown board of the hive, and made, when nicely filled with fresh comb honey, a very attractive appearance. It was discovered to be a very awkward package and no better than an ordinary straw super, thousands of which are used in England at the present day. They are small straw hives of exactly the same shape as an ordinary straw skep, and are placed over a hole in the top of the stock hive until filled with honey, then being removed. There are two beekeepers, neighbors of mine, who use nothing else and they have only "gone in" for supering at all during the last two seasons although frequently visiting my apiary.

The advent of foundation materially assisted these cautious beekeepers toward advancement. Their bell glasses were provided with curiously wrought devices in foundation, and so supers with combs built in the form of stars, rings, etc., were frequently seen exposed for sale and are seen so even now. As the comb honey from such supers was exceedingly difficult to cut out in separate pieces a further step forward was taken; and square boxes, fitted with slatted tops, having along the centre of each slat a strip of foundation, were provided on supers so that when the combs were finished they could, by passing a knife down each side be removed separately and so sold.

After this the work of the British Beekeepers' Association (formed in 1874) began to bear fruit and the few beekeepers who raised sectional honey obtained so ready a sale for it, and so cleared the board of all prizes at the various shows, that imitators began to spring up in all directions and then we were fairly launched into the industry of honey production, a consummation only reached to any extent during the last four or five years.

There not being many apiarists in England who exercise this calling as a business has led to their being quite a number of what I may term fancy beekeepers; they are men who will set aside one or more colonies of bees for the purpose of producing fancy supers. I do not know whether this would be the right term to use in the States; what I mean are supers made in various designs and curious patterns. I have, in visiting different shows and apiaries around the country, come across a large number of these. One exhibited last year at a show was a glass case made somewhat in the form of a church, minus the steeple, filled with combs in various patterns forming windows, doors, etc. Others produce symbols or mottoes wrought in honey comb by ingeniously arranging foundation and separators. Last season these were very plentiful, a mania seeming to have seized upon beekeepers to inaugurate in honey comb the fact of the Queen of England having reigne l fifty years. These no doubt to some are very pretty and I must own that they prove quite an addition and attraction to a honey show. There is one of these supers exhibited in a shop window in Reading, Berks, Eng., at the present time where the motto "God save Reading" is well executed in comb honey; this is in three pieces and no doubt was built by three separate colonies of bees.

The system of "tiering up" is now the chief method adopted by the advanced beekeeper; before this the "Combination" hive was principally used; this was a very long hive capable of holding from twenty to twenty-four frames placed across the entrance. When a certain number, say ten, of these frames were filled in the brood-nest, others were added behind a queen-excluding diaphragm for extracting purposes, or for section honey wide frames, the width of sections, holding six sections were in a like manner arranged; there was also room on the top for a rack of sections which was covered over by the roof or lid of the hive. Supering with frames of sections is, in England, almost unknown, racks similar to the American being used having the bee space at the bottom; top bee space is never seen. Separators are invariably used principally made of No. 5 or 6 plain zinc. The racks are so made that they allow of a lateral movement of the sections which is to be preferred to a rack only of just sufficient size to hold the required number of sections.

The craze for reversing supers had its run in England as in America but has quite died out. Last season the Jones-Heddon hive *neé* Carr-Stewarton caused quite a flash in the pan; but notwithstanding the repeated queries appearing in the British bee-papers very few or I should say no favorable opinions have been expressed by either its former advocates or those who have purchased such hives and tested them during the last season; my own experience is that these are no better than any other; in fact, I shall not use any more than I have at present. Shallow frames of about 5½ in. deep used in "tiering up" for extracting purposes only are occasionally seen in England especially in the north, I am inclined to think that these will come into greater

favor; they are easily uncapped and suit our variable climate better than deep ones (8½ inches).

Binfield, Berks, Eng.

Alley's Drone-and-queen Trap.

R. B. WOODWARD, M.D.

We have used fifteen drone-and-queen traps the last three years, and have observed very closely their workings. We keep from fifteen to twenty colonies, partly for honey and partly for the pleasure and the diversion of the pursuit.

Our occupation is that of a physician and we are compelled to be away from home a large part of the time. Our office is away from our residence and apiary—the latter is located on one of the most frequently travelled streets in the village.

We do all the work in handling the bees ourselves as it would not justify us in hiring a person to assist us. Our bees often swarm when we are miles in the country and gone all day, and yet we have never lost a swarm or a queen in swarming. Neither have we hived a swarm that has clustered except one which clustered on a shade tree about seven feet from the ground on the sidewalk, and we did this for the safety of the public.

When I wish to start another after the swarm is out, I set the old hive back and a light nucleus box in the place of the old hive and the trap containing the queen *inside* the box. If the bees have clustered, I take a long pole and stir them up when they will soon come rushing back and go into the box or nucleus hive. I then carry the box or hive to where I want it to stand, having first prepared the hive with foundation, combs, or what I wish. I take out the trap and set it in front of the hive and shake all of the bees out in front of the hive and they will soon begin to run in, when I open the trap and let the queen run in with them, etc. I then put the old hive back in its place and the work is done. For increase we usually divide. To prevent increase I use the methods heretofore given in the APICULTURIST and am successful.

With us the traps are surely indispensable and we could scarcely get along without them, as they save us much anxiety and trouble in hiving swarms and trouble in going on our neighbor's premises after swarms, etc.

Further, we have observed closely as to the *ingress* and *egress* of the *workers* and cannot see that the trap *materially* obstructs them in their work. To persons who keep a few bees and are compelled to be absent a great part of their time, we can most cheerfully recommend them as one of the greatest improvements and conveniences in the pursuit of beekeeping in *any* age, and we have no personal or pecuniary interest in so stating.

Somerset, Ohio.

Contribution to the Physiology of the Honey-bee.

L. STACHELHAUSEN.

The food for the larvæ, how prepared.

It is a well-known fact that all young bee larvæ receive a whitish jelly prepared by the bees. The worker larvæ are fed by this jelly till the fourth day; after this their food is very different. The queen larvæ get this jelly in abundance all the time. The jelly in queen cells seems to be more thick and yellow, while the food of the worker and drone larvæ is more watery, this is caused by evaporation because the royal jelly is longer in the cell than that for worker bees. Not only this; the larval food for queen, drones and worker bees is of different chemical composition.

The question is now, how is this jelly prepared? v. Berlepsch affirmed long ago that this jelly is the same fluid found in the true stomach of a breeding bee—chyle. About 1872, Prof. v. Siebold affirmed that this royal jelly is secreted by glands (salivary glands) and that the true stomach is closed against the honey stomach by a valve, so it is an impossibility that the contents of the true stomach should be vomited by the bees. He meant hereby the piece *n*, *o* (see p. 135) of the stomach mouth prolonged in the true stomach. These glands were examined and described by Siebold, and later Leuckart had the same opinion, that the royal jelly is secreted by glands.

There are several different reasons against this theory. Schoenfeld still believes that the royal jelly is prepared in the true or chyle stomach of the breeding bees. To prove this, he examined this named organ very carefully.

We have seen that the piece, *n*, *o*, is by no means a valve but has quite other functions. If the royal jelly is prepared in the true stomach and should be vomited, this organ is no hindrance. First, the true

stomach is compressed and a moment later the honey stomach; so that the four lips spring into the honey stomach even to the opening of the pharynx. Now the true stomach is more compressed and its contents are emptied directly through the four lips into the pharynx and outer mouth without being mixed with the contents of the honey stomach.

I called the royal jelly chyle. This may seem strange because with higher animals the fluid in the stomach is called chyme, while chyle is a more digested chyme in that time when it is assimilated with the blood. But with bees it is quite different. Here all the digestion is done in the stomach and the fluid goes through the walls of the stomach directly into the blood, while the intestines receive the indigestible parts of the food only. So we see, if with higher animals the chyle is prepared in a lower part of the alimentary canal, with bees this is done in the true stomach and the same is called very correctly chyle stomach.

So this chyle is the royal jelly; to prepare it, the bees eat honey, pollen and water (water for the purpose to eat the pollen). The composition of this fluid is a quite fixed one, and this composition is different in preparing the food for queens, drones or worker larvæ. This food goes into the true stomach in the manner described. Here it is digested, at first to chyme and then to chyle; the difference in both is caused by the time only, how long the fluid is in the stomach. The fluid is again vomited into the cell in the above described manner.

The queen and young worker larvæ receive, we will say, well-digested chyle, while the older the worker larvæ grow, the shorter time will the fluid remain in the true stomach or, in other words, these larvæ receive chyme after the four days.

Selma, Texas.

Introducing Virgin Queens.

Dr. G. L. Tinker.

It is the exception to the rule that any colony or nucleus that has been queenless seventy-two hours or more, will readily accept a young queen just hatched from a cell. With such introduction of young queens almost every beekeeper is familiar. After a queen becomes twelve hours or more old the conditions for her safe introduction are changed, and it becomes an exception to the rule if she is not killed if introduced by any plan of direct introduction. Special conditions must be created, the most essential of which is absolute queenlessness of the colony or nucleus to which it is desired to introduce such a queen. By this is meant the taking away of the queen and all unsealed brood. These measures, whatever else is done, are imperative to success. And further, it is also required, as a rule, and particularly with each of the yellow races of bees, that the colony or nucleus has had a laying queen for at least twenty-one days or until her young bees begin to hatch out.

If the attempt is made before this to introduce an old virgin queen and especially if to a nucleus that has several times been deprived of its queen before her brood hatches, there will be found no trouble to introduce the queen but she will not be allowed to fly out and mate, but will be balled to death on her first attempt to leave the hive. This, however, is a common occurrence where queens just hatched are run into such nuclei, and often occurs in full colonies. The trouble in all such cases is from laying workers.

There are also certain details of procedure required to insure uniform success, but the following may be depended upon. We will take, for example, a virgin queen received by mail, that may be from one to ten days old; she is placed where she is safe for twenty-four hours but not near the hive selected to introduce her. First, remove the reigning queen. The next day towards evening prepare a hive or nucleus with one comb of honey and fill out with frames of empty comb or combs of all sealed brood, or with frames of foundation. Cage the virgin queen alone in a cage having a little "Good" candy and insert next to the comb of honey or brood. Now shake all the bees into this prepared hive or upon a sheet in front of the hive, and give the combs from which the bees are shaken to another colony. The bees will be greatly excited over the loss of their brood but will get quiet during the night. In forty-eight hours the queen may be liberated, in the evening, and is certain to be well received and to mate in a few days. After she has mated and is laying, the brood taken away may be returned, or that from other colonies given as desired.

In giving all sealed brood to the prepared colony, great care is required to exclude any unsealed brood for, should there be only one worker egg left, failure is almost certain as the bees will choose it rather than the mature queen. When I use sealed brood for the purpose it is always taken from a colony that has been

queenless not less than nine days and all cells removed.

Virgin queens may also be introduced to any full colony that has been queenless nine days after first cutting out all cells; but the young queens, if more than twelve hours old, must be caged from twenty-four to forty-eight hours. They may be introduced to nuclei in the same manner but are liable to be balled when they attempt to fly out to mate. Probably one-half to two-thirds of the queens so introduced will be allowed to mate, the risk diminishing with the strength of the nucleus.

The writer has tried almost every experiment to introduce old virgin queens, but with poor success except by the methods here given. The first is well-nigh infallible, as it is also in the introduction of laying queens.

New Philadelphia, O.

Letter from Wisconsin.

MRS. H. HILLS.

I am *clear provoked*, and may as well tell the readers of the API about it; possibly may receive a little sympathy.

Last season, a good-natured, honest, kind-hearted German beekeeper, living two miles from me, began to visit my apiary for the purpose of learning new plans for beekeeping. I consider it a part of my business to give all the information in my power, for I truly believe that a benefit to *one*, is a benefit to *all*. Mr. Kohl was very grateful, and even anxious to pay me money for my time and information; which I decidedly refused. Then he ordered a colony of bees prepared in the best possible manner for winter, at any price I might name. He brought his hive at mid-summer, and when I was uniting colonies, after the honey-harvest was over, I put two colonies in it, with forty pounds of capped honey,—brood-chamber contracted by division-board, about one-quarter. He took home the colony the first of November, and filled up, at that time, the empty quarter of the brood-chamber, with combs of honey, purchased of me. I weighed his hive before putting in the bees, and we weighed it when he took it home, deducted weight of hive, and he paid me ten cents a pound for the contents.

So far, so good. To-day, April 9, he came and told me of the fate of his bees. Says he packed them on summer-stand, with four inches of chaff all around them, as he did his other half-dozen colonies. *Now*, that colony of bees—which he took home in such fine shape, and just crowded full of bees, as one might say—has not a double handful of bees in it, while all the others appear, he says, to be in good condition, including even a quite small one, which he bought of me, at the same time he took the heavy one, and at the same rates.

He says there is abundance of honey left in the heavy colony, but most of it, he says, is "hart." Now what made that honey candy? It was exactly the same honey that I was placing in my own hives, and not one of my colonies has even *thought* of dying, that I know of, neither in cellar, or on summer-stand. Perhaps I ought not to make quite so sweeping a statement, for just *one*, very heavy one, had to be got out of the cellar the first of March, as a good many bees appeared to be dying. I opened it, but did not notice any candied honey. They were great robbers last fall, and I thought they might have brought in something injurious; so when taken from the cellar, they were given a card of nice white clover honey, extra, to make sure. They are yet dying off some, but a good heavy colony enough, after all the loss.

But to the matter in hand. I could not let things go in that way with Mr. Kohl; so this morning gave him another good colony. He did not ask nor expect it, of course, and says he shall pay for it; but I do not wish him to pay for it and shall take nothing, but I am "mad" about it all the same. It is so provoking that that honey should candy! I cannot help thinking there is something wrong in his management, and *he* by no means *denies* it, but says he hopes to *learn* good management But why should the small colony, which I let him have, do so well? Well, I prepared one for neighbor Crocker, at the same time and in the same manner and for the same price; and he put it in his cellar the middle of November, and has not looked at his bees since that date. Said he should get them out to-day, and I am going straight up there, and see if he has done so. I prepared one for the minister, in the same way, except that it had chaff division-boards at the sides of the L. frames. Not understanding just when he ought to get it home, he failed to take it until so late in the season that it was thought best to leave it where it was until spring, which was accordingly done, merely putting on the upper story and filling the same with blankets and cushions; and it is now in fine condition.

Later: Have been at neighbor Crocker's and find that the colony he bought of me is in the very best condition. My bees have wintered entirely without loss.

Sheboygan Falls, Wisconsin.

Uncle Samuel's Letter to Prof. B.

A. C. TYRRELL.

I can't endorse all your new-fangled inventions,
And theories advanced at our Beekeepers' conventions,
The use or sense of which I can't clearly see,
An' they'r an' agrivatin' nuisance to the workin' B.
I have kept B's as you do know, nigh onto 40 years;
But now confess have many grave an' tryin' fears;
For you'r bound to knock our bizness hier nor a kite,
A formilatin' plans by day an' lyin' awake all nite,
Studyin' how to interfere with old dame natur's laws;
Into ev'ry thing of old repute, a pickin' holes an' flaws.
Your manipilating of things would provoke most eny saint;
An' if the B's git mad, they'r smoked till sick an' faint.
Am not prepared to say jist yit that man, he must know best,
When he fixed up so handily the reversin' brood-nest.
Do you think your patent hives an' various contraptions,
Are better far than skeps an' gums of bygone generations?
B's now do waste some precious time admirin' their new quarters,
An' showin' their neighbors, their wives an' their dawters,
Thro' the intricate windin's thus made an' provided,
(Those not similarly fixed are most soundly derided)
That the warp an' woof of their lives play out,
An' honey runs to waste while they'r loafing about.
An' our pretty yellow pets so gentle an' confidin',
Can't tell from day to day where next they'll be residin'.
You say you'v got the finest, the largest strain of B's—
The hardiest, an' not so apt to seek the hollow trees
When the swarmin' fever, unrestrained, is fairly on,
An' all the men an' boys an' hired help is gone.
Are Holy Land, our native blacks, or serious Albinos,
B's we can safely gamble on, or most vindictive foes?
In the sentient light of boasted science, whosoever knows
Whether B's are angered most by lite or colored clothes?
How you'r to improve the race is not so plain to me,
Tho' I've been a long time figurin' on the comin' B.
But in spite of science, natur' will be natur' still,
An' like our women folks, "when they will they will."
By what rule do you keep 'em down an' passive quite,
When you invade their domicile at any hour at nite
To take away surreptitiously that which they highly prize,
An' fill chock full of fire smoke their blinkin' eyes?
Why doth the little workin' B improve each 60 minits,
An' use his natural implements for all there is in it?
I suppose that father natur', in creation's dawnin' light,
So got him up an' gave to him the inalienable right,
When in the field at work, or in his hive at rest,
To puncture us if he's foolished with, like evil one possessed;
An' he'll do it jist so sartin as the wind that blows;
So the man of weakly nerves still covers up his noze.
He's gentle an' he's kind, an' labors for his board,
But logic an' musty lore is ev'ry time ignored.
For me they'll make comb an' honey, jist as white an' sweet,
Without a usin' supers to run them straight an' neat.
Now at the beck of "Great Heart" R., the Gleaning's scientist,
The boys an' girls ar enveloped deep in scientific mist,
A freezin' up of bees an' bringin' em back agin
To life. Old men are gittin' young agin'
And say they can't refrain from indulgin' in
The beastly fun of packin' 'em on ice—

The poor inoffensive little B's congealin' in a trice.
The research will still go on till the facts are all developed;
Till all the men, an' boys an' girls in glory are enveloped;
Till each an' ev'ry applicant secures the proffered knives,
Otherwise the work will cease with their illustrious lives.
Friend Smith, he's advocatin' sugar granulated, white an' pure,
For wintrin' honey B's, successfully an' sure;
But natur' never had a thought when constructin' a workin' B,
That he'd lug in nectar from ev'ry shrub an' tree;
T'was thot' he'd seek to gather only what was pure an' good,
An' not fill up his skeps an' gums with poisoned food;
An' natur' didn't construct her hives of ev'ry known device,
An' pack 'em full of straw an' chaff, so very precise.
My skeps are gettin' rather old, an' let in wind an' air,
But I reckon MY B's 'll hibernate with safety there.
I once got lots of honey in hollow trunks of trees,
There stored by abscondin' swarms of honey B's.
If I'd touch up half the hobbies afflictin' our B-fraternity,
I'd be kept writin' my natral life an' thro' all eternity.
My rhyme may be somewhat at fault, my measure not didactic,
An' thro' your gold-bowed specs seem somewhat erratic,
An' maybe to your way of thinkin', have but little force;
But you can't twist old natur out of her accustomed course,
For she ever builds true to line; an' in the ages yet to come,
Will ne'er mould a B with sharper sting or more contented hum.
I know I'm right, an' am forced to conclude,
That forever the drone will be a rollickin' dude;
An' the B as now, 'tis sad to relate,
Will continer to git "mashed" on his elegant shape.

Madison, Neb.

The Api will be sent to any address on receipt of 75 cents. Those who accept of this offer will be entitled to the drone-and-queen trap for 35 cents.

Our Brethren.

M. A. KELLEY.

A good word for bee publications and for beekeepers.

As a class, beekeepers are fortunate in many things. To merely mention all would take too much time. Let three suffice.

First, then, as to the beekeepers themselves. Can any other occupation so limited as to numbers as is ours show so many "shining lights?" We should be, as we truly are, proud of our leading brethren. Proud of them because of their talent and learning, their ability and disposition to give information to us "lesser lights." I would like just here to say whom I have in mind, but I will not, for the list would be too long to be measured by your indulgence. "Verily, they have their reward." And the rank and file, too, of our people are, I think, above the ordinary run of common vocations. Of course there may be, doubtless are, some bad men among us; but they are few.

And, again, we are fortunate in that we have such good periodicals devoted to our calling. There is no excuse for ignorance as to our business upon the part of any of us when we can, by the outlay of a small sum, secure such useful literature. The trouble with too many is that they regard a dollar in the hand worth two in a book. Many want to know but would like others to do the paying. I am often pestered by "fogy" box-hive men and "fraudy" patent-clap-trap men in search of information. Of course it is a pleasure to give good people all the light we can, but there should be a limit somewhere. It seems to me that limit is found when several swarms hang on the trees and the tired beekeeper has hardly time to eat. I often tell my inquiring neighbor beekeepers to subscribe for and read the bee journals. And surely, any man, or woman either, who expects to succeed in beekeeping will find more than the worth of their money in any journal that I know of on this green earth. Often in *single issues* I find ideas that are worth more than the entire annual subscription price.

And lastly, as the parson says, we are fortunate because of the spirit of brotherly kindness that modern beekeepers display toward each other. Every issue of every bee-paper that comes to my home contains valuable information clothed in language radiant with brotherly love. Years ago some of our editors and writers were discourteous to each other but this is now a thing of the past. Now, thankfully be it said, brotherly kindness gleams upon the page like diamonds set in gold.

So may it continue to be until we all shall see eye to eye and feel heart to heart; until all shall cling to virtue for virtue's sake, and try to do good to our fellowmen as the highest, holiest duty of man.

Milton, W. Va.

The National Beekeepers' Union.

EXTRACTS FROM THE GENERAL MANAGER'S REPORT FOR THE YEAR ENDING JUNE 30, 1888.

It becomes the duty of your general manager, at the end of the third year of the existence of the National Beekeepers' Union, to review the important events of the fiscal year just ended, and with special pride he makes the announcement that, so far, the Union has been successful in every case in defence of the pursuit of keeping bees. No decision has yet been obtained inimical to the pursuit of beekeeping.

The membership of the Union has not increased as much as it was expected, but this may be accounted for in the fact that the drought of last summer prevented the bees from gathering much honey, and therefore beekeepers have felt too poor to add to their ordinary expenses.

In several cases your manager has been consulted as to the best course to pursue when beekeepers were threatened with lawsuit, by envious or jealous neighbors. After giving due consideration to the detailed facts in each case, they have been advised as to the best course to pursue, and in many cases lawsuits have been averted by the conciliatory measures advised by the Union. In two cases, where the bees were *really an injury* to the neighbors by being too close to the line where sweaty horses were driven almost constantly, the bees have been removed by advice of your general manager, and thus all trouble has been averted. In other cases compromises have been advised, and the wisdom of such has been seen in the amicable relations now existing, where trouble had been brewing.

The "Rich" Lawsuits.

As mentioned in our last report, Mr. S. W. Rich, of Hobart, N. Y., was sued by a jealous and disagreeable neighbor for $1,200 damages, and also to compel him to move his home-apiary outside the city limits. Beekeepers from several states attended the trial, which was held last October before Judge Boardman, at the Delaware county court. About forty witnesses were called.

The plaintiff asked for $1,200 damages for injuries inflicted by the bees upon his person and property, but the jury, from which every person having bees was excluded, gave him but *six cents* to cover wounded feelings and damaged property!!

This virtually declared that the bees were *not* a nuisance. The result is an overwhelming defeat for the enemies of the pursuit of beekeeping, and another victory for the National Beekeepers' Union.

But as the award of even six cents as damages carried with it costs amounting to $468.04, the case has been appealed to the Superior Court, which will cost about $500 more. Judge Boardman ruled against the bees every time, and in charging the jury compared the bees to a pig-sty and a slaughter-house. This was the first case with one exception ever tried in the state, and the judge having no law or precedent to go by, ruled just as *he* thought right, with the above result.

It will not do to let beekeeping be likened to a pig-sty or a slaughter-pen! It is an honest and honorable pursuit and its rights must be preserved. This appeal will be heard this fall, the Union having engaged lawyers and guaranteed the expenses of the new trial. Had the judge been inclined to be as *fair* as the jury, this would have been unnecessary.

Arkadelphia "nuisance" case.

This case, mentioned in the last report, will come to trial about July 16, 1888. Meanwhile, Mr. Clark has been sent to jail in default of paying a daily fine for maintaining a nuisance by keeping bees in Arkadelphia, Ark.

The *Union* has employed several of the most noted attorneys in that state to defend the case, and confidently expects a decision in favor of the pursuit. It would be very detrimental to the pursuit to allow a decision against beekeeping to be put upon record on the plea of its being a "nuisance."

Mr. Clark gives the following particulars of the case:

I was released on a *habeas corpus* bond on March 2, for my appearance at 10 A. M. the next day. I had not been home with my family more than about three hours when I was re-arrested and taken before the mayor and fined $14 and costs, and remanded to jail again. Of course it would be nonsense to pay the fine and go back and have the same thing to go over again the next day.

The mayor fined me one day when no one had seen any bees about my place. He sent the marshal to my house to ascertain if he could see any bees—it was cool and no bees were flying. The marshal did not see any bees, and swore that he did not, but the mayor fined me "all the same."

We have appealed all the cases—eleven in number—the first fine was $5.00, and an additional dollar for each day; the last day's fine being $15.00. He even fined me after we had made affi

davit asking for a change of venue, averring that I "could not get a fair trial and that he was prejudiced," etc.

I am confident that if beekeepers could fully realize my condition, the Beekeepers' Union would have 10,000 members in twenty-four hours.

By the enforcement of an unlawful ordinance of the city, Mr. Clark has been deprived of his liberty, and the constitutional rights guaranteed to every citizen of the United States. Even granting that it was wrong in Mr. Clark not to obey the city authorities, he should have had a speedy trial by an *impartial jury*—all of which have been denied him. Even when released under a writ of *habeas corpus*, he was, within three hours, re-arrested and fined. After demanding a change of venue, because of the prejudice of the mayor, that functionary again fined him, denying him his constitutional rights. Mr. Clark has a strong case, and in justice to the pursuit, ought to be defended. The *Union* agreed to pay the Hon. S. W. Williams $250 for defending the case up to and including the trial at the Circuit Court next week.

A member of the Union gives his views of this case in these words:

It is our duty to stand by him and hold up his hands while he is suffering imprisonment and put to great inconvenience and pecuniary loss in the defence of a principle which is dear to us all. Surely, in a matter of this character, the injury of one is the concern of all. I would willingly pay a dozen assessments rather than have Mr. Clark worsted in this matter.

No extra assessment would be necessary if but one-tenth of the beekeepers of America should join the Union. The manager does not favor an *extra* assessment and will not consent to such, unless it becomes an absolute necessity. If its devotees will not defend the pursuit, who should do so? The defence should have universal support. A few ought not to bear the burden for all. Donations of any amount will be cheerfully received, but extra assessments are not desirable, because what may be a mere bagatelle to some might prove a *burden* to those less able to contribute their quota.

The only wonder is that there were not 10,000 members of the Union within a few months after its organization. There ought to have been *a general rush* to the defence of the pursuit.

It is a shame that, with 300,000 beekeepers in the United States, so few are willing to defend the pursuit against its enemies. Many are selfish, and think that so long as they are not molested, they will not join the Union; but as soon as they are even threatened, they rush around for some help, and want the Union to tell them what to do, etc. But the advisory board has decided that the Union can defend only those who have become members before they were in trouble of that kind.

It will take nearly two thousand dollars to successfully defend the cases now on hand, and the Union must have two thousand dollars during the coming year, or it will be obliged to let the cases go by default—and the pursuit will suffer an ignominious *defeat!*

To those not members of the Union.

Reader, are you satisfied to accept the latter as the result of your apathy? If not, sit down at once and send a dollar as a membership fee to the National Beekeepers' Union. You will get a receipt by return mail, and may then have the consolation of knowing that you have done your duty in this case! It is *now* or *never!* Inaction will insure defeat—activity is *life*—energy—power!

UNION IS STRENGTH.

Still another victory for the National Beekeepers' Union.—Z. A. Clark's case, who was put into jail at Arkadelphia, Ark., last spring, for maintaining his apiary in the suburbs of that city, came on and was tried before the Circuit Court in the July term. The case was tried on the "clean-cut" law question, viz.: that the "city ordinance was illegal and void." The first *victory* in this case is *for the Union*, the Circuit Court deciding that the city ordinance was *illegal and void*—that *the keeping of bees was not a nuisance!*

When the prosecution realized that beekeepers had an organized body for defending the pursuit against the malicious attacks of the ignorant and the prejudiced, it *weakened*—it tried "to hedge"—was willing to dismiss all the cases against Mr. Clark on a pretended informality in his bonds!

The city of Arkadelphia has decided to appeal the case to the Supreme Court. This is very fortunate, for we want a decision which will count. One from the highest court is what we need to declare that beekeeping is *not a nuisance!* And it will be done. The Union has paid the retaining fee, and it will be ably defended again by Judge Williams, the most successful attorney in Arkansas, who assures the general manager of the Union that he is ready for the fray. The Supreme Court meets next October.

Here is what the Little Rock daily *Gazette* of Aug. 7 remarks about the trial, under these headings: "A Celebrated Case. After a Long Legal Contest, the Little Busy Bee is Set at Liberty at Arkadelphia."

The celebrated bee case, which excited so much interest in Arkadelphia, last summer, was decided yesterday in the Circuit Court, Judge Hearn presiding. The case was the City *vs.* Z. A. Clark, for violating a city ordinance, declaring the keeping of bees, within the city limits, a nuisance. Mr. Clark resisted the ordinance upon the grounds of interfering with a natural right. Judge Hearn held that the ordinance was void because it declared the keeping of bees a nuisanee *per se*, which the law does not recognize. Considerable interest is manifested in the case, the National Beekeepers' Union of Chicago, being the backers of Mr. Clark. The city has appealed to the Supreme Court.

It is not only the *privilege* of apiarists to belong to such a "Union" for defence — but it is a *high honor*. Like the Royal Huzzars of history, the Union has never yet been beaten! *Victory* has perched upon its banner in every contest so far undertaken in the defence of the rights of its members! This is, of course, attributable to the care exercised in canvassing the cases before deciding to defend them; to make sure that they are RIGHT before going ahead with them! For if not *right*, it would be better to be beaten than to be victorious.

Mr. Clark writes the following statement of the case, which will be read with interest:

Arkadelphia, Ark., Aug. 7, 1888.

FRIEND NEWMAN:—I received your telegram yesterday evening, in answer to the one I sent you, asking me to send full particulars. I have been feeling so elated, being congratulated by friends so much—(since the burial of the "nuisance case") that I hardly feel able to write. Everybody in our little city, white and black, is rejoicing but the anti-bee councils and their followers.

The case came up on Saturday, Aug. 4, when the city attorney began to show weakness by trying to turn us out of court, on a motion to dismiss all the cases against me, on the informality of my bonds, stating that my bond was not sufficient, but Judge Hearn overruled the motion.

When my attorneys, Judges S. W. Williams, Witherspoon, Murray and McMillan made a motion to dismiss the cases against me upon the *voidness* of the ordinance, Judge Williams made an able speech in defence of beekeepers, in which he showed that he knew something about bees himself, having been an old bechunter in the early settlement of Arkansas. After which, the judge stated to the attorneys that he had lived a long time in Arkadelphia, that bees had been kept here all the time, and that the keeping of bees *per se* was not a nuisance. He reserved his decision until Monday morning at nine o'clock, when he stated that the case would go to the Supreme Court, no matter in which way it was decided, but stated he wanted to be found on the *right* side, when decided in the Supreme Court. He then sustained our motion to dismiss the case and declared the ordinance void. The city attorney then gave notice of an appeal. Hence, we go up higher amid the cry of "victory" and "hallelujahs."

This shows what brothers can do when banded together, with a captain like Thomas G. Newman, to direct our battles against ignorance and the prejudicial whims of an ignorant populace.

Z. A. CLARK.

Reader, did you ever think what a power there is in an organized defence? and what a powerful defence it is, when the members of the pursuit combine and engage the best legal talent which can be had—and plenty of it — and planting their feet squarely upon the constitution of freemen — in this "Land of the Free and Home of the Brave" — they demand the rights guaranteed to every "honest son of toil" by that *magna charta* of American liberty and independence — the Constitution of the United States?

THOS. G. NEWMAN.
General Manager.

Questions and Answers.

Social Island Mills, Pa.

MR. ALLEY: The traps came to hand in good condition. I don't think I could get along without them. Some persons complain of their bees going to the woods, but I have lost none.

Please find enclosed specimen of a plant that grows very plentifully here on poor and almost barren land, and is a great favorite of the bees. They will pass by white clover for this plant. I should like to know what it is.

J. M. SHOEMAKER.

ANSWER BY PROFESSOR COOK.

The plant you send is *Echium rulgare* or Viper's Bugloss. It belongs to the Borage Family and is a very excellent honey plant. It is called Blue Thistle in Maryland though this is a very inappropriate name. The flowers are arranged in a long narrow raceme, are deep blue, and very handsome. No, it is not at all like Rocky Mountain bee plant, either in color or habit of leaf, stem or flower.

Hubbardston, Mass.

MR. ALLEY: The sample copy of the APICULTURIST received. Will you please answer the following questions:

1. How much space do you allow under the bottom of the frames in winter?

2. What sort of winter passages do you make, and what do you cover the frames with in winter?

3. When should bees be fed for winter stores? Also how many frames do you use in winter?

4. How much sugar does it require to winter a colony of bees?

5. Should the snow be kept away from entrance of the hive if there is plenty of ventilation through the section at the top?

ANSWERS BY HENRY ALLEY.

1. About three-eighths of an inch in summer and one inch in winter. Any where from one inch to six inches of space in winter is an advantage.

2. For winter passage ways I have used some sticks placed crosswise the frames a few inches apart. A mat of some sort is then placed over all and a cushion, made of a cheap-grade cotton-cloth filled with hay cut fine, is placed on that.

3. I do not approve of feeding as late in the fall as some beekeepers recommend. Bees should be fed in September, and before the 20th of the month, too. I do not like to disturb the hives for any purpose after frosty nights set in. A colony of bees can be wintered on from four to twelve standard Langstroth frames. I use seven and eight frames, but think bees winter best on seven combs when they are well filled with good honey.

4. A good colony of bees should have twenty-five pounds, nice granulated sugar fed them in order to have plenty of food for both winter and spring.

5. By no means allow the snow to block the entrance of any hive. The bees need no upward ventilation. The air should be allowed to circulate around the bottom of the frames as much as possible, as that is where the combs mould first. That is why so much space should be given at the bottom of the frames.

East Sidney, N. Y.

MR. ALLEY: I received your postal answer to my question, also the copy of the APICULTURIST, and am well pleased with it. Now I want you to answer some more questions.

1. You say the trap does not need attention oftener than once a month. Is the trap so arranged that it can be put on and taken off quickly? and in hiving a swarm how can you prevent the drones going with the bees when the queen is released?

2. In the August APICULTURIST you have an article on "requeening after the swarm issues." After you have waited three days do you allow the queen to run in or do you cage her? and if you do not want the cells would there be any danger in cutting them out.

3. Could the queen be introduced by caging the next day after the swarm issues without destroying the cells?

LESTER JUDSON.

ANSWERS BY HENRY ALLEY.

1. The trap needs but little attention except when it is filled with drones. This will not occur more than two or three times during the season. The trap is provided with a little opening made in one end of the division-board, so that by removing a small nail the queen can pass out and into the hive and no drones can escape. This need not be done unless the drones are of a sort that are not desired in the apiary.

The trap is so arranged that it can be put on the hive in less time than it takes to say so here. Most hives are provided with an alighting-board, and the trap is merely placed on that board.

2. When introducing a queen by the three-day method she may be allowed to run in at the entrance, or at the top, provided a liberal amount of smoke is used.

3. Yes, the cells should be removed if the queen is not introduced until one day after the swarm issues. A queen can be introduced by caging and without removing the cells. When a swarm issues, of course the cage must be arranged so that the bees can remove the food and thus release the queen. As soon as the queen is liberated the bees will permit her to destroy the cells, and no more swarms may be looked for from that colony that season.

Foul Brood.

P. M. Aldrich, Fairmont, Nebr., on July 19, 1888, asks the following question:

About three-fourths of the bees in this vicinity have died from foul brood; and in Grafton, seven miles west of here, quite a number of colonies died last year. I think that the hives were left on the stands, not knowing what had killed the bees; and nearly all are dying this year. I watched mine, and those near me, and killed and burned them as soon as I found it in a hive. Please tell me if I did right. Do you think that there is a cure? I have not seen a sign of it among my bees this season. I had twenty-five colonies left from sixty last year. They are swarming and doing finely now.

You did just as we should have done, upon discovering the disease in our apiary. We have but little confidence in the so-called cures for foul brood. The editor of the *Canadian Bee Journal*, giving his experience with foul brood, says: "Last season we experimented with phenol, as did also Mr. A. I. Root, and neither had the success which would enable us to recommend it as a permanent cure. It did relieve, and to a certain extent cure, the colonies afflicted, but we could not depend upon it as lasting."

Mr. A. I. Root says that if he should own a small apiary and discover foul brood in it, he would burn up the whole rather than endeavor to experiment in curing the disease. If the larvæ be elastic and ropy, it is a sure indication of foul brood. This is a sure test, but the odor is not to be re-

lied upon. Fire is our favorite remedy. —*American Bee Journal.*

That is right, friends, this is another instance where the manager of the APICULTURIST was in advance of most other beekeepers. Some twenty years ago our apiary was all destroyed by foul brood. I saw at once that a disease so contagious must be stamped out promptly, and instead of spending my time in experimenting for its cure, a bonfire was made of the hives and all wood used about them, and thus I rid my apiary of every trace of the disease. The disease did not originate in my apiary, but came from the famous bee-yard of the Cottons, of West Gorham, Me.

It is refreshing to note the fact that some of those who opposed our recommendations to cure by fire, now think it is the best remedy to apply. If anyone has foul brood in his apiary, proceed at once to destroy everything about the infected colonies. Don't spend your time or money for the nostrums some people advertise, as not one case in one thousand can be cured or is curable.

A large colony of bees.

If any one has any doubt about eight L. frames being enough for one colony of bees, let me say to him that only a few days ago I brushed all the bees from the combs of a hive having but *seven* frames; there seemed so many of them that I thought it best to weigh them. They were placed on the scales and tipped the balance *quick* at eleven pounds. Considering that the queen was reared by an "artificial" method, and by a method that brother Hutchinson cannot make a success (though he has never tested it), I must say that the queen or hive in question is worthy of notice. Had these bees filled their sacks as full as they do when a swarm issues, I have no doubt about the weight of them being upwards of fifteen pounds.

Experiments in queen-rearing.

By leaving out one word I was made to say in the August issue that I had discovered nothing new in the queen-rearing line for several years. The blunder was clearly my own, and right here allow me to say that something new is being discovered nearly every day in the Bay State apiary. When I am so dull that I can learn nothing new about bees, then the bee business and I will part company. Well, friends, let me say that within a month I have, through experiment, found that a colony of bees can be made to build cells even when there is a fertile queen in the hive. I must say that I was never more surprised than to find experiments in this line working perfectly and satisfactorily. Even the first attempt to have the bees build cells without removing or caging the queen was a decided success. If this method works as it now promises to do, the old methods of queen-rearing will be numbered with the things of the past, and such a thing as the word *artificial* as applied to queen-rearing will not be used by beekeepers, as by this new process of cell building, the queens are all reared, strictly speaking, under the swarming impulse. The conditions, under which the queens are reared are exactly the same as when a swarm is about to issue.

This will not revolutionize queen-rearing, it will not lessen the price of queens, but it will be the means of producing first-class queens with much less trouble, labor and time.

Introducing queens.

IN August issue of the APICULTURIST I gave a method for introducing queens direct to the bees. Since that time, I have introduced several other queens by the same process and find that it works very well as not one queen has been destroyed. The plan is this: When the queen is received by mail, or otherwise, and if in one of the cages such as queens are sent in from the Bay State Apiary, just turn the wirecloth back that covers the food so as to leave an opening large enough for a queen to pass through Then remove the queen from the colony and insert the shipping-cage in the corner at the bottom of one of the brood frames. In the course of twenty-four hours the bees will have removed the food and released the queen. All this will be done so quietly that the bees will not even suspect that the new queen is a stranger among them.

In future all the cages sent out from our apiary will be prepared so that the purchaser will not be troubled to do it. By this method the queen can be placed in the hive as soon as received, or the one in the colony can be found and removed. If the queen to be removed is not found when first looked for, the cage can be placed in the hive and will be all right, if the food is protected so that the bees in the colony cannot molest it.

I am so confident that this method will work successfully that I will send other queens to those who test and make a failure of it. Bear in mind that some smoke must be blown in among the bees at the entrance, and as the smoke from rotten-wood will do no damage a liberal quanity may be used.

The Jones method of getting queen cells.

There is probably no better time than in August and September for re-queening an apiary, or introducing new blood by the purchase of a few queens. At this time of the year queens are plentiful and cheap, the beekeeper has time to attend to their introduction, while the leaving of a colony queenless a few days is less objectionable than it would be before the honey harvest. Considerable care is necessary, however, to rear good queens at this season of the year. Simply removing the queen from a colony seldom results in securing the best of queens at any time of the year; queens thus reared after the honey harvest is over and past are "pretty poor sticks." We have always raised the finest queens, at any time, by the Jones method.

Take all the brood and the queen from a colony, giving it a nice comb in which eggs from a choice queen are just hatching, cutting a few holes in the comb, then shake all the bees from half the combs of two or three colonies, in front of the hive where the cells are to be built. We thus get a great mass of bees with only a few larvæ to feed; the hive is jammed so full that some of the bees are crowded out at the entrance most of the time. Some of you may think this an expensive way of getting cells; but try it once; and when you come to cutting them out you will consider it cheap. The bees build a large number of cells, the queens hatch about a day sooner and begin laying sooner; besides, they are large, strong and well developed. We would just as soon have queens reared in this manner, during the next two months, as any we ever had.— *The Beekeepers' Review.*

The above way is the "helter-skelter" method of rearing queens, but, why it is called the "Jones method" is more than I can understand, unless it is because Jones sticks to an old worn out method longer than most other men. The same method as above was practised in the Bay State Apiary more than twenty years ago, with this difference—instead of putting all the young bees in to start with, they were added daily until the fourth day. This was done not only to obtain large queens, but to get a large number of cells as well; each new lot of bees added would start other cells. By the method now used in the Bay State Apiary, all the cells desired can be obtained and by improved methods, and there is no necessity for rearing cells by the so-called Jones method. I am quite sure that I described the above method in the *American Bee Journal* nearly twenty years ago.

That is the plan to rear queens by those who can get the best results from it. It does not suit me, as I cannot afford to rear queens by a method that takes so much time, labor and is so uncertain as to the number of cells that will be produced. The plan given in the Handy Book will give a certain number of cells every time; there is no uncertainty about it.

Why rear queens in that old-fashioned way when there are so many better plans? Why rear queens by having the cells built in clusters? Why cut and hack nice brood combs in order to get a few queens? Why not use a method by which a certain number of cells are *sure* to be reared every time and those that will produce queens of the best quality, and at the same time have them all built in rows and just where most desirable in the hive?

The attention of those who propose to rear queens is called to the remarks of the manager on page 174 in this issue. I now have a fine lot of cells built by the described method. Please understand that when I state that I rear queens in full colonies without *removing the queen from the hive*, I mean just what I say. The queen is not caged, nor is there any device used to confine her to any particular combs or part of the hive, as she has the freedom of the combs exactly the same as when no queens are being reared. There is nothing that even smells of humbug about this.

The plan is a thoroughly practical one and those who can rear queens by any method can make this a success. Some of the advantages over the old methods are these: 1. Queens are reared practically under the swarming impulse. 2. It is an immense saving in bees. 3. No hive will be queenless nor does it interfere with the working of the colony, whether the bees are used for comb or extracted honey.

A Freak in the Apiary.

July 10, I introduced to a small colony, what I supposed was a pure Italian queen. To-day I can show the handsomest colony of Albino bees to be found in this country. Can any one tell how this happened? There were no Albino bees in my apiary, and the other queens reared at the same time do not show any marking but that of pure Italian.

Ozone, Ark.

MR. ALLEY: The drone-and-queen trap has been worth $25 to me.

J. W. TAYLOR.

Cartoons for pound sections.

A. O. Crawford of South Weymouth, Mass., filled an order for us for 1000 cartoons for about $5.00. I never used nor yet saw such things before these were received. The honey when placed in them is completely protected from flies or from being soiled in any way. All the honey being sold by retail at the Bay State Apiary is placed in the cartoons. The price of them is so low that it is an inducement to all to adopt them.

The Beekeepers' Review.

The August issue of this excellent bee-paper treats of "exhibiting honey at fairs." Such men as H. D. Cutting, Prof. Cook, James Heddon, M. M. Baldridge, R. F. Holterman, Dr. A. B. Mason, J. H. Martin and other well-known writers have taken part in the discussion.

To our readers.

If you are observing, you have noticed that the APICULTURIST has four pages added to it this month. This was made necessary in order to accommodate the large amount of copy on hand, and at the same time give the readers some selections from other bee-papers. Sixteen pages of the APICULTURIST will be filled with the best matter, and so arranged that they can be bound without any advertisements.

Mailing queens to Canada.

I notice that much has been said of late in the bee-papers about mailing queens to Canada. I did not think such talk worthy of notice, and when I received an order from that country I mailed the queens the same as though nothing had been said about it. Several orders for queens have come from there this season all of which have been delivered to the persons who ordered them. I discovered some dozen years ago that the best way to find the truth of such reports was to post the package and continue to do so as long as they were received at the post office and went all right.

A few years ago just such a canard about mailing bees was started in this country. I had an interview with the postmaster of Salem (as all my queens were mailed from that office) and asked him whether he had had orders not to receive queen bees. His answer was that he had received no instructions of any kind regarding bees and that he would take all I desired to send. The result was that only *three* queens were thrown out the mails during the season.

The World type-writer.

I had heard so much about the World type-writer that I could not longer resist the temptation to test one. Accordingly, I sent $6.00 to the office of the *New York World* and in a few days the wonderful little machine came. In less than one hour I had got the "hang" of it so well I gave up the pen altogether and shall use the type writer for making all copy that is to be put in type. No doubt those who receive letters from me wish I would use the machine in my business correspondence. Cannot do it, friends. It would take too much of my time. "You must grin and bear it" until I am able to get a larger and better machine, though the one I have is all I need at present.

However, I am well pleased with "The World" type-writer and would not take fifty dollars for it if I could not get another one. I NOT only got the type-writer for the sum of six dollars, but the *New York World* one year besides. The express charges on the package was but thirty-three cents.

Selected.

How to tell from what hive a swarm issues.

THE other day when walking through the yard we found a large swarm clustered on an apple tree, and as no one saw them issue and they apparently had been clustered for some time, we commenced looking about to ascertain to what hive they belonged. We felt very much like returning them to the parent colony, but not knowing which one it was, we then found the difficulty. We walked up one row and down another, looking at each hive, and the bees seemed flying as fast at one entrance as at another. Directly, we found a large double colony with the bees entering more rapidly than in any other, but apparently no bees or scarcely any leaving the hive. About ten bees would return laden with honey and pollen to one that would go to the field from the hive. This convinced us that this hive must have swarmed, whether this cluster was the one that belonged to it or not, so putting a little flour in a tin dish, dipping a few bees into the flour, we took them to the centre of the yard and tossed them up in the air. After flying about for a short time some of them returned to this colony. Occasionally, one would light on another hive, but the majority of them either returned to the swarm clustered on the tree or to this hive which had so many

bees returning from the fields. Right here let us say, if our memory serves us rightly, friend Doolittle or some other good brother has mentioned throwing the bees up with flour on them to tell from what hive they came. We have sometimes taken the queen from the swarm and allowed them to return themselves, as they will usually do after finding themselves queenless, but there is a risk to run in this matter, and that is this: if it is a second swarm that issues, there is very frequently a number of queens; and, though we should find several, it does not prove that we have found all, and should one queen remain with the colony the bees would be liable after clustering a short time to leave for the woods and the colony would be lost. So it does not do to take any chances in this matter. Where there are one or two hundred colonies in a yard, even though the hives have got second stories on them or plenty of room, it will pay to keep a large number while the honey flow continues, as there are sure to be more or less swarms issue almost every day. Very frequently, from colonies least expected, where queens are being superseded or the old queen has been killed, and they have raised young queens, the first that hatches, if not allowed to destroy the others, is liable to issue with the swarm. We hope to have more encouraging reports in future after the fine rains and favorable weather which we are now having.—*Canadian Bee Journal.*

From the Beekeepers' Magazine.

An easy way to find any queen.

I have had one year's experience at beekeeping; commenced in the spring of 1887 with one swarm, and had a varied experience, and very, very much solid pleasure (no honey); transferred, increased by division, and had one swarm come out, and now have, or had last fall, five swarms in chaff hives, one black and four Italians; but my great feat, if I can call it such, was in Italianizing a swarm of black bees. I followed the directions as laid down in the books at my command and all told me to open the hive and examine each frame carefully for the queen; if not found, close the hive and wait twenty minutes and look again. This I did again and again, every time with the same result, till I almost came to the conclusion that it was a queenless swarm, and looked at my beautiful yellow queen in her cage at a loss what to do with her. I thought of the following plan, and it worked well. I opened the hive again, gave the bees plenty of smoke, jarred the hive and gave time for every bee to fill with honey, then took each frame out and brushed every bee into the box, set the frame back and put a trap made of perforated zinc at the entrance of the hive, placed a newspaper on the ground in front of the hive, and brushed all the bees out of the box on the paper, and let them run in through the trap into the hive, and as the queen could not get through the openings in the zinc, she was found and caught. As soon as I had her safe, I put the cage containing the Italian queen in the hive between the frames, and closed the hive. This was done about noon, when most of the bees were out. The next morning I looked into the hive, found all quiet, so let the queen run out. In the afternoon looked again, found her on a frame, and think she had been laying that day. Everything went well after and I am in hopes to see her sometime again this spring. X

Races of Bees.

From the Am. Bee Journal.

BY C. A. BUNCH.

Different varieties of bees and the plants they prefer.

Quite likely a great many beekeepers have noticed that certain kinds of bees prefer some kind of flowers, while other races of bees work on different kinds of bloom at the same time, and as a general thing brown or German bees work on weeds more than the Italians do. I have all Italian queens, except one which is a Syrian queen; some of those queens are pure Italian, and some were mated with black drones.

One Italian queen I have reason to believe was mated with a Syrian drone, on account of the different markings on the abdomen of the workers, and the great number of queen-cells that they will build; also their different disposition. This queen was reared in 1886, and last year through the month of August its colony of bees gathered about fifteen pounds of comb honey from the common blue-thistle (this is not a large amount of honey, as we had a drought at that time) and was capped a pale white, but the honey was quite white.

The cross between the black and Italian races were hauling in and sealing the yellow (or amber) honey, the cappings of which were so much different when the sections were mixed with the sections from the Syrio-Italian colony; they could very readily be picked out, though they

were not built down so nicely at the bottom, there being more space between the bottom of the sections and the bottom of the comb. I noticed this more on account of the dark bees having a reputation for capping their honey whiter than the yellow bees, but it was the reverse this time.

The dark hybrids and black bees seem to work well on fall flowers, such as asters, Spanish-needle, smart-weed, and other fall flowers. After the thistle was out of bloom, there was but little difference in the looks of the honey.

There is always lots of timberland being cleared around here, as this was a heavily timbered country, and these clearings are mostly covered with thistle, besides lots of swamp land with fall flowers, and of course the bees have their choice.

Now, as I have had the German or black bees, the Italians in their purity, and also the Syrian bees, and watched them closely as to disposition, honey-gathering and comb-building qualities, I much prefer the best strains of Italians. The bees that are my choice are, first, bees that are gentle; second, bees that are industrious and pay well in dollars and cents for their keeping; and third, bees that are yellow and three-banded, for beauty, as I am a great lover of the beautiful.

La Paz, Ind.

The North American Beekeepers' Association will be held at Columbus, Ohio, on October 3. Full particulars may be had of W. Z. Hutchinson, of Flint, Mich.

Hard luck.

Bees have done so poorly the past few years that some of the bee-papers are having hard luck. I can say that the APICULTURIST not only holds its own, but is gaining in subscriptions.

Doolittle's book.

A copy of Mr. Doolittle's book on queen-rearing has been received and will be noticed as soon as I can find time to look it over.

Queens by return mail.

Since August came in, we have shipped queens by return mail. We can supply nearly three hundred more golden-yellow queens, all of which are guaranteed to produce fine and beautiful young queens. Those who choose now to renew their subscriptions for 1889 can, by remitting $1.50, secure one of these fine queens. This offer, and the inducement to purchase queens given under the head of "Introducing queens," should be a sufficient guarantee of success and satisfaction.

Special prices: During the balance of the season $5.50 will purchase six selected queens, and to each purchaser the APICULTURIST will be sent free one year. $10.00 will purchase twelve *select* queens and the APICULTURIST one year. If these queens are not as good as I claim for them, the money will be returned on demand.

A bad season in the west.

Western beekeepers seem to have had hard luck the present season. the honey crop having been a complete failure. Mr. R. L. Taylor, of Lapeer, Mich., writes that not even the brood-chambers have any honey in them. The bees throughout New England in 1887 were in just that state, and we know how to sympathize with our western friends. The cause of the failure of the honey crop at the west has not been explained to us. Probably it has been too hot and dry in some places, and too wet in others. Neither of these reasons was the cause of the failure here in New England in 1887. There was no honey in the flowers, even when the weather was favorable. This may be the trouble at the west.

The Honey Harvest of 1888.

There seems to be no doubt about a short crop of honey, if we may judge by the reports given in another column from prominent beekeepers in all parts of the country. The only effect of this will be to drive some of those out of the business who expected to become suddenly rich by keeping bees, but the old beekeeper will not be in the least discouraged by the failure of the crop of 1888.

In response to inquiries regarding the honey crop of 1888, the following replies were received.

Waterboro, Me.

As near as I can estimate thirty-three per cent of a crop with a good prospect for fall honey. C. W. COSTELLOW.

Cherry Valley, N. Y.

Our crop of white honey is not to exceed one-fifth of that of last season. The buckwheat, or dark honey, is yet an unknown quantity, though the prospect is good. J. E. HETHERINGTON.

THE AMERICAN APICULTURIST

A JOURNAL FOR THE NOVICE AND EXPERT.

Devoted to Best Races of Bees, Best Hives, Best Implements and Best Methods of Management to make Beekeeping a Success.

PUBLISHED MONTHLY. HENRY ALLEY, *Manager.*

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HARVARD COLLEGE

Correspondence.

Honey Resources.

J. S. BIDDLE.

As the honey season in almost every section of this country is about over, the observant beekeeper has acquainted himself with the resources of his locality, and from a close and practical knowledge he will know what is the most reliable source and where it can be improved.

In this short article the writer will not attempt a description of every honey plant and tree, but only the most important, as they come in along the honey season; to notice every honey producing plant and tree even in this part of the continent would form too lengthy an article, I fear, for formal publication.

There is rarely a flower with golden tints or that imparts its fragrance on the air that the cheerful bee does not frequent its labyrinth and find some luscious nectar there.

This article being intended only as a description of the honey resources, the pollen and propolis resources will consequently not be described; they form a separate subject and afford considerable of interesting thought alone.

E'er the gloomy winter has made its exit and withdrawn its glittering frosts and crowning caps of snow from hill and mountain top, the willow (*Salix*) bursts forth in blossoms of orange hue, as the advance agent of vegetation, proclaiming in harmonious accent, with the early warbling songster, that welcome summer is nigh; from it the bee steals its first luscious meal, though the willow is not a great honey yielding species, yet blossoming so early makes it of special value. There are, at least, one-half dozen different varieties.

The sugar maple (*Acer saccharinum*) yields an abundant supply of delicious nectar, and its blossoms adorning the tree in graceful fringes will seemingly be almost alive with bees.

Of the fruit trees that afford a honey harvest to the industrious bee, we notice the peach, apricot, cherry, plum, pear and apple. The latter exceeds them all in abundance of nectar, and if the weather is favorable in the apple blossoming season they will fill their empty cells.

The tulip tree (*Liriodendron*) commonly called poplar. A peculiarity of this tree is its blossoms expanding in succession, thus making one of the greatest honey producing trees of America. A large supply of fine flavored honey is often taken from it alone.

The linden (*Tilia*), known as linn or basswood, yields an abundance of fine flavored honey; from my own observation there is no other resource from which bees can gather as much in the same length of time as from this tree, and in some localities it is alone the honey resource, and an abundance is stored from it.

Many of our homes could be greatly adorned and benefited if, around our dwellings, along the roadsides and lanes, we would plant a number of these trees: the tulip, linden and maple that grow so majestic and adorn themselves with clusters of fragrant blossoms, making them an ornamental shade tree. Then we have the flowering magnolias of different varieties and yellow wood (*Vergilia lueta*) with its long racemes of white, sweet scented flowers. All of these would greatly beautify our homes, add to their value and largely increase the honey resources of the country. Here is the American locust tree yielding a large quantity of honey at a time when other bee forage is scarce. It comes in, however, before the tulip and linden. The chestnut adds greatly to the honey resources. Many persons (those that have given the subject some attention) suppose that the product the bees gather from off the chestnut is a honey dew that has fallen there; such is not the fact. According to later investigation, it is found to be an exudation from the tree itself and not like the honey dew that falls at different times and in various places. I have been informed by reliable authority that it has fallen upon men while

engaged in working in grain fields, so much so that their clothes seemed saturated with a syrup of white clover which is abundant in almost every section of the United States. Wherever it abounds the bee finds a rich harvest; it yields large quantities of pure white honey and unexcelled by any other in flavor. The season of white clover usually lasts a month; in favorable seasons, six weeks or longer. Blooming at a season of the year when the weather is generally dry and hot, affording a field of forage when there is nothing else to gather from, it ought to and could be more extensively enlarged.

Indian hemp (*Apocynum cannabium*) is a plant that affords a strong flow of nectar and bees seem to appreciate its delicate flower by a continual hum over it. Catnip (*Cataria*) is a profuse flowering, aromatic plant and continues in bloom for a month or more; it produces an abundant supply of highly flavored honey and blooms just at the close of white clover and is becoming very abundant in southern Pennsylvania. Wild cotton or milkweed (*Apocynum androsœnifolium*) is another plant that produces a large quantity of honey; it generally is found growing in low lands and along mountain sides where it is damp and frequently along roadsides; wherever it grows plentifully the bee finds a good source from which to recruit its store of sweets.

We have in this section another plant that exceeds anything for a long continuous honey flow. The botanical name I think is *Leonanis cardica*, but as to that being the proper name there is doubt. It grows about two or three feet high, sending out lateral branches almost from its base. These branches or stems are encircled with a pinkish-colored flower, covered with a down. The flowers nearest the base or main stock are one and a half to two inches apart, becoming closer together as they near the end of the stem and are finally one against the other. The wonderful peculiarity about this plant is the continual ripening and forming of new flowers at the same time. Commencing about the first of June to blossom, near the base and on the branches near the main stem and as the branch grows in length it adds on, as it seems, a new flower every day and continues to bloom in profusion until the first and middle of August. Many of the branches put forth flowers until the branch is two feet long; bees seem to work on it in preference to white clover. They fairly swarm over it from early morn until late in the evening which is the best evidence that it yields nectar very rapidly. It is not what could be termed a noxious plant, it is easily eradicated, but seeds itself year after year; it produces a crystal-like honey with a pleasant flavor. This plant, with the other before mentioned plants, could be profitably sown in waste places and rough hillsides. If any plant would pay cultivation, especially for honey, this plant would; although my opinion, like that of many observing apiarists, is that it does not pay to cultivate any plant or cereal for the honey it produces alone, but where a crop can be grown that will afford good bee forage and a crop of grain or fruit besides, such we think is profitable to those that are interested in bees and honey.

Thus, we have the raspberry that furnishes a most delicious honey; in flavor it has no equal. The sides of roads and along many of our fences this shrub could be profitably grown, and rocky and waste spots counted worthless could be made as valuable as garden spots. As there is no richer fruit of the berry kind, always commanding a high price in the market and a luxury to every table, and as when in blossom bees delight to sip its dainty nectar, there is no reason why it should not be largely cultivated.

Buckwheat affords a honey harvest when all other honey blossoms have appeared in their season and vanished away. This cereal can be sown at different dates affording a successive honey resource, until the frosts of autumn assert its sway. A peculiarity of its blossom is, that bees can only gather from it not later than the middle of the day, unless the weather is damp and no sunshine. Some seasons it yields an immense quantity of honey, other seasons it yields but very little; its honey is a darkish color, but its peculiar and very rich flavor makes it a favorite of very many persons who are not won by appearance alone; not always is the lightest colored honey the best. Many experienced beemen claim that buckwheat honey is the best on which to winter bees. This is my experience. Along the base of the Alleghany mountains, in this country, I learn from men who have paid attention to bees that they experience very little trouble in wintering their bees. In that same locality, there is always an extensive crop of buckwheat sown.

I have briefly sketched the honey resources, but sufficient to show that the first requisite in beekeeping could be greatly improved, and one of no little importance; and if as much attention was paid to it as there is devoted to the hive, with all its late affixes, etc., the success would be greatly improved.

Loysburg, Pa.

Patents.

R. L. TAYLOR.

It seems there is a question arising among beekeepers concerning the propriety of obtaining a patent on any article pertaining to bee culture. It is broadly asserted that the beekeepers of this country are now generally of the opinion that it is not best to obtain such patents. I know not on what authority such assertion is made, but I trust it is not true. I am glad to notice that the APICULTURIST has boldly challenged the statement and it seems to me the matter is of such great importance practically as well as morally, that I have thought it worth while to say a word upon the topic.

It appears plain to me that the patent laws are beneficent in their effects to all: to the inventor in protecting him in his right to his own invention, and not less so to others who reap the fruit of his skill and study by reason of the laws furnishing him an incentive to apply his skill and study. Many are opposed to the granting of patents but that is not a difficult thing to account for. Some are opposed because they are themselves destitute of mechanical skill and so imagine that a freedom to use the inventions of others would be the most advantageous thing for them. Others because, through a spirit of general charity, they think, though stumbled, perhaps, at the idea of taking the thought, time and money of the inventor without recompense, that the greatest good to the greatest number would come of a like freedom. Still others are manufacturers of beekeepers' supplies and aim to make and keep for sale everything that is largely called for. Naturally enough, such desire about all the profit that can be obtained, and so would prefer that the inventor have no legal right to any part of it, and either shut him out from all financial benefit, or else only give him credit for a nominal sum to be fixed at the discretion of the manufacturer, and accepted as a gift. But all these overlook the great fact that every party to a transaction taken as a whole must receive a share of the profit, or transactions become infrequent and business suffers. The drive wheels of a locomotive cannot say to the other wheels, give us all the oil, for that would create friction and locomotion would cease.

It requires time, thought, labor and money to make and perfect an invention, and certainly the laboring inventor is worthy of his hire. And if that is so, should he not have legal protection in his right?

And then comes the dissemination of the invention and the making plain its functions and advantages. How often when an invention has been patented, and its dissemination begun does some one rise up and claim that he invented the same thing long before. He did not believe in patents, perhaps, and so seeing no hope of adequate reward, let his invention sleep in secret. The other, having hope of a reward, publishes his discovery, and this so far as the public is concerned is the chief virtue of an inventor. Without question, the knowledge of articles patented is more likely to be disseminated.

All effort is made through some incentive; and in the struggle for sustenance and a competence, there is only one incentive that moves all, and that is the hope of gain. Who will say it is best to take that incentive away?

It is said that patents give an opportunity for the commission of frauds. If that were true shall we abolish genuine money because it gives an opportunity for counterfeiting? But it is not the patent on an article that gives the power to perpetrate fraud. That is rather a safeguard, as the fee prerequisite to the use of the invention begets caution and careful examination. Fraud is accomplished through the effort made to disseminate a worthless article. To the simple, the fact that an article is proclaimed as unpatented, smacks of honesty, and they are easily caught by bait having apparently such an aroma. Thus, through advertising and other active efforts, a certain hive which is very inconvenient in use, and its making very laborious, and which is discarded by almost every beekeeper having bees in any considerable number, as soon as he gains a little experience, is now selling to beginners more extensively than perhaps any other hive. Practically it operates as a fraud to a greater extent than all other beekeeping articles with patents real or pretended combined. I speak from experience with the hive both practically and financially. A patent on the hive instead of increasing the injury, would have lessened it very materially. A few dollars' charge for individual rights has a wonderful effect in suggesting caution in the adoption of new devices.

Smokers furnish another case in point. The ones protected by patent are decidedly the best, and the ones heralded as unpatented are the ones to be shunned.

It is also objected that inventions are the work of many minds, and, therefore, a single person should not be allowed a revenue from them. It is true, no doubt, that inventors draw upon the common fund of knowledge amassed by others, but

is he who is acute enough, and studious enough, and devoted enough to combine that knowledge, and make it produce practical results, and is, after that, sufficiently enterprising to bring it to the doors of the multitude, and to persist in explaining it until stubbornness itself shall admit its value, therefore entitled to no credit?

There is much food for thought in this subject, but time and space forbid its further pursuit at present, but let us intelligently consider, that we may get into a proper attitude with reference to it.

Lapeer, Mich.

Carniolans and other Races.

L. STACHELHAUSEN.

I have known the Carniolan bees since about 1868 and saw them in the apiaries of my friends and have had a few colonies myself. The first Carniolan queen imported into Germany had no sign of yellow blood and they were very similar to the brown German bee, only the hairs of the young bees were more gray or white. Since that time Carniola has exported a great many colonies, swarms and queens and some strange races may be imported there and so the Carniolans are more or less mixed. The proper Carniolan bee is certainly nothing else but a variation of the so-called German bee. The difference in the exterior markings is not more plain, than with other variations of the same race, and so it is with the other characteristics. In the north of Germany, in Hanover, we have another variety of the German bee, quite alike in habit to the Carniolans, but more black. They breed well and early in spring, breed drones all the time and swarm as often as anybody can wish, exactly like the Carniolans. In the middle and south of Germany you can find a strain of bees more brown than black, slow in breeding and swarming. A colony with a young queen will not build any drone-comb or swarm out the first year and some colonies and strong ones, too, did not swarm for many years. But now this variety of the German bee is mixed with all the different imported races and you can hardly find a pure colony. Why is this difference? The answer is, that the Carniolans and the northern German bees are varieties of culture and to a certain degree fixed by a certain management for more than one hundred years. In both countries the main honey flow is late in the fall. In the spring the beekeeper does all he can to get early and many swarms. To get as many colonies as possible for the crops, in both countries very small hives are used. In the fall all the surplus colonies are brimstoned, the heaviest and the lightest colonies are killed and in the selection of the stock for the coming year the beekeeper is very careful. He selects colonies with young queens only, mostly afterswarms; a colony, which cast no swarm at all, is surely brimstoned. It is easy to see, that in this way queens with a swarming impulse only are selected and so by the run of the years this impulse got more and more fixed. The Carniolan and the German bees rear too many drones and build too much drone comb, but this characteristic is necessarily in connection with the swarming impulse, and every race possessing this swarming impulse will do the same.

In both the so-called races you see a strain of bees bred and fixed by the hand of men by selection and not by crossing. This fact will show us the way by which we can get a race of culture. It can be done by selection of queens to breed from with the desired characteristics; but this selection has to be done, and carefully, too, for many generations before a certain characteristic may be more or less fixed.

I do not believe we can get a fixed race by crossing two different races, because in a couple of generations the markings of the one race will more or less disappear. I believe that the Italian bee is a cross between the Egyptian and the black bee, but it is no fixed race yet. In the time of the late Virgil it is known, that in Italy were black and yellow bees and so it is to-day. The first bees exported from Italy looked quite mixed up, some nice yellow bees, some of them we would call hybrids now. Dr. Dzierzon imported the first Italian colony to Germany about 1854 and bred from this one queen all his queens for many years. For breeding he selected the most yellow queens or better queens with the most yellow daughters and in a few years his Italian bees looked nicer than any of those imported directly from Italy. Soon a big trade sprang up in Italy for queens and the breeders were more careful to select for color. More than this, they imported some Cyprian queens to mix with and better the color. This selection and breeding in one direction can be done as easily here in Germany and so every dollar spent for an imported queen from Italy is, in my judgment, lost.

The Italian bee is as nice a bee as any, and if we breed not for color only but look for other good qualities too, we can surely

breed a strain of bees adapted to our purposes.

What is a bee good for like the Carniolans that send out swarms and afterswarms in an unlimited number at least containing a dozen and more young queens and about two dozen worker bees? (I have seen such afterswarms not quite as large as a child's fist.) Mixing this race with a good strain of bees on the one side, and every year inventing another management to prevent swarming is merely nonsense. These bees are very good for their location and for certain purposes, but not for American apiaries.

Further I know, and proved it too, that the Italians are better honey carriers than the black bees (at least better than our black bees). I had them side by side during a couple of years, and the hybrids are as good for working quality as the pure Italian, but not better. But to get hybrids I want some pure Italians to breed from and will get hybrids more than I want by themselves. If I breed from the hybrids without later selections I have black bees, with the same bad working quality again very soon. I know what I talk about, I have tried it.

It is proved that the Italian bee can be bred by careful selection to a more yellow color; in the other direction the same bee can be bred to a dark colored one. I think this is proof enough, that the Italian is no fixed race, but a cross of two races, that may be more than one thousand years old. If we breed a race or strain of bees by crossing or selection, we can keep this race by constant and careful selection only; and the same bees coming to other circumstances will lose their characteristics in a few generations.

So it seems very improbable to breed a fixed race for any purpose. The best way will be all the time to select from the best stocks and we can improve our bees as long as we select; and shall go backward if we stop selecting.

Selma, Bexar Co., Texas, Nov. 28, 1887.

Facts and Apparent Facts.

G. W. DEMAREE.

THERE is such a thing as "too much learning." Dr. Tinker's answer to the queries of Mrs. W. O. Calkins, on page 143, July issue of API, is handsomely done, and is very comprehensive to the thoroughly posted, but for the beginner in the mysteries of the inner life of the bee, it reminds me of the story of the great southern evangelist, SAM JONES. A pious old colored brother visited his pastor in his study and found him preparing his sermon with "six books opened before him." The old colored man was amazed at the array of learning brought to view, and stammered out, "Ef you take dat sermon from dem six books you am goin' to put de fodder too high, sah." Dr. Tinker has put the fodder too high for the average beginner. There are but two kinds or sizes of cells composing the honey comb, called worker and drone cells. There are practically twenty-five worker cells to the square inch of honey comb, on each side of the septum, or centre wall between the bases of the cells, while drone comb contains but sixteen cells to the square inch on each side of the septum. Now it will be seen that the smallest sized cells of which the honey comb is composed are the worker cells, and the largest size are the drone cells.

The two kinds or sizes of cells are never builded promiscuously together, but each size is built in separate groups. So when you examine a sheet of honey comb it may be composed of part worker cells and part drone cells in any imaginable proportion, or the whole sheet may be made up of the one or the other size of cell complete. So it will be seen that we must learn to distinguish the two kinds of cells, one from the other, by their comparative size of the one to the other. The worker cells being the smallest of the two standard sizes of cell, we know them at a glance as soon as we have practice enough to carry the two standard sizes in our mind. This is positively necessary as it is impracticable to have the two sizes together at all times to make the comparison.

Worker cells are used by the bees to rear worker bees in, and also to store away honey and bee bread (pollen). The drone cells are used to store honey in, and to rear drones in, in their season. One of the greatest triumphs of modern bee culture is found in the ability of the apiarist, by means of foundation to exclude all drone comb from the brood-nest, except what is absolutely necessary to furnish drones for breeding purposes. Queen cells are no part of the honey comb, they are nothing more than adjuncts to the combs when it becomes necessary to rear queens preparatory to swarming, or in case of superseding old queens, etc. The bees *remove them when they have served their purpose.*

Queen cells are easily distinguished from the two standard sized cells because they appear as adjuncts to the comb, and are usually as large as the little finger and half as long, and their protruding ends point downwards, which features make the queen cells very unlike the horizontal standard cells. It may look to the old "bosses" like a waste of time to write in this strain, but I know how perplexing

these things, which now appear so familiar to us older beekeepers, are to the average man or woman who for the first time begins to inquire into these matters.

Loss of young queens at mating time.

Not a single author of our standard works on bee culture has ever thrown any light on this subject so far as I have seen. They all tell us that the young queens are lost by entering the wrong hive on their return from their wedding flight, or they may be captured by birds, etc. There is hardly a shadow of truth in the *causes* paraded to this day to account for so many missing young queens at mating time.

In the early part of May, 1884, I made up about twenty-five nuclei as a commencement of the queen-rearing season, and gave each of them a maturing queen cell; but before the cells had time to hatch out there came on an unusually cold spell for the time of the year, and the result was the loss of about fifteen out of the twenty-five queen cells by reason of being chilled during the cold nights. The weather continued cool for some days and there was delay in getting other cells ready and this delay brought on an abnormal condition in the nuclei, by reason of the presence of too many old and indifferent bees. The sequel was many of these nuclei were an entire failure. They "balled" every young queen given them — always at mating time, and this, notwithstanding they were supplied from time to time with hatching brood with a view to restore the nuclei to normal condition. Here I got my first clew directing to the real cause of the loss of young queens at mating time. The cause is the presence of old, cranky, jealous bees, not necessarily laying workers, for in the cases I have mentioned and in divers others since then, under careful observation, no signs of the presence of fertile layers could be discovered.

I have noticed that under these conditions the young queens are never disturbed till they attempt to *seek a mate*, and then the persistent spiteful "balling," commences and nine times out of ten, results in the ruin, or actual death of the young queen. By means of smoke and a close watch over such abnormal nuclei I have saved the lives of many young queens but such rescued queens are hardly worth the time and labor bestowed on them, as they are generally maimed and cowed by the severe ordeal through which they have passed. The remedy is to give hatching brood to the nucleus, and when the young queen is three days old, or thereabouts, move the nucleus hive to a new location in the apiary. This will draw off the old bees, as they will go back to the old stand, and the young queen will be left to mate and enter upon her life's labors under the care of young friendly bees.

Swarming-out in the spring.

Nearly all authors and writers, so far as I have seen, are wide of the mark as to the true cause of *swarming out*. They tell us that young queens are lost at mating time by entering the wrong hive, and that the swarming-out *mania* is caused by the "dissatisfaction" with the condition of the hive, impending starvation, etc. Such facts are only *apparent*. In fact they are not facts at all. Swarming-out is the result of the absence of a sufficient quantity of young bees to keep company with the queen when a general flight of the workers takes place. Finding herself so nearly deserted, the queen becomes excited and takes wing with the workers and the excited colony may return to their home, and they may not; in the latter contingency, it is a case of "swarming out." A queen-and-drone guard placed at the entrance of the hive will prevent the excited queen from taking wing, and the *cause* is removed.

Patent bee-gums — Consistency a jewel.

The editors of the APICULTURIST and of the *Review*, have both taken A. I. Root through a course of bulldozing because he opposes patents on bee implements. I am pretty well acquainted with the bee literature of the past, and have to say that Mr. Root has been *consistent* in his course touching this matter of "patent bee gums,' and this is more than I can consistently say for Prof. Cook, the two editors aforesaid, and a number of others who of late have been laboring to persuade the bee-fraternity that patent bee gums are a great blessing. It appears not to have occurred to these innocent people that the question of right and wrong in our patent laws is not the question at issue. "Patent bee gums" have been in the past, and are at the present a disgrace to the apicultural pursuit, and because of this immoral feature of the business I oppose and combat it. I am glad that at least *one* American editor has the manliness to stand to his convictions.

Christiansburg, Ky.

The only reply I have to make to the remarks of Mr. Demaree regarding patents is this: most of those people who "kick" against patents and patent laws are those who do not possess a sufficient amount of ingennity or mechanical skill themselves to invent or devise an article of any practical worth. Those who take advantage of the patent laws to protect their interest are satisfied that the present laws are as near right as any that can be framed. I do not agree with Mr. Demaree when he says Mr. Root is right in the position that he (Root) has taken on the patent question. But of this more will be said in another issue. The attention of Mr. Demaree is called to the article of Mr. R. L. Taylor on another page of this issue. No one should understand that I invite a controversy on this subject. I do not nor do I want it.

Virgin-queen traffic.

A. L. SWINSON.

THE sale of virgin queens is now in its infancy, though destined to become, if properly understood, one of the most satisfactory methods of introducing new stock among the beekeepers of America, instead of the higher priced breeding queens as is now practised, for introducing the *best blood*, at a much higher rate and attended by much greater risk and danger of loss compared to the amount expended and the probable results of benefit to be derived therefrom, compared with the value of the two methods. Any queen breeder in America who breeds queens *for sale*, will very readily sell a virgin queen from the very best breeding queen in his apiary at a nominal sum of less than a dollar, when no reasonable sum could buy the said breeding queen. Twenty dollars, in many instances, would not buy the *best queen* that some queen breeders have, while for from 50 to 75 cents he would sell a *selected virgin daughter* from said queen and guarantee safe arrival, that would, although mated to a common Italian drone in the purchaser's apiary, produce very nearly, and in some instances *better drones* than would the mother queen of the virgin queen that could not be bought.

So the apiarist would, for a mere nominal sum, have secured the *better half* in *value*, than he could have done had he bought the mother queen of the virgin, even admitting that she was a fine breeding queen for queens and drones alike—which is seldom apt to be the case, for usually the best queens for breeding queens of, are not the *best drone* producing queens.

The next object of the apiarist then should be to get of another breeder, virgin queens of *his best selected breeding queen*, and get them *mated* to *drones* from the queens of those procured of the *first breeder*. When he has done this, he has secured a most perfect *cross* of two or more strains of bees, that should give him *breeding queens* fully equal to the mothers of either lot of the virgin queens procured, admitting that both are of the best stocks attainable in America — and we have in America, unquestionably, some of the best strains of bees to be found anywhere in the world that has ever yet contributed any of its stock to the bees of the United States; as many of the best apiarists who have among them, tested all that have been introduced here, are ready to attest the fact.

Goldsboro', N. C., Dec. 5, 1887.

Letter from Texas.

MRS. S. E. SHERMAN.

I HAVE planted and tried very hard to raise something for my bees, so that in a dearth of nectar from native sources I should have something to fall back upon. So far, my every effort has been futile. I have in a small way tried the large Russian sunflower, two varieties of buckwheat, and red, white and alsike clover. So much faith had I in melilot or sweet clover, that at four different times, both in the spring and fall, I have planted it, yet at this writing I haven't a single plant of it on my place. Several years ago, I spent twenty dollars for lucerne or California clover seed, and having it put in the ground. It came up as nice as could be. I had a beautiful stand. I was delighted with the prospect. Thought I was all right now on the pasturage question, when, lo! the drought set in and it was only about eight inches high when it stopped growing and finally died. I have not a single stalk of it now. I'll tell what I have succeeded with after all my failures, and that is Johnson grass. Not for the bees but for my horse and cattle. It has been worth at a low estimate, this dry year, at least $25.00 per acre. I have about come to the conclusion not to plant anything for my bees unless I try pleurisy root. Our land here is, I think, too subject to drought to be successful in raising nectar-producing plants. We shall have to try and be satisfied with natural resources from which to obtain our honey. Most of the black or native bees have died through last winter and the past unprecedented dry summer. Bees will be scarce in this part of Texas another year. The weather has been quite cool for several days past so that the bees were confined to their hives for some time. This morning the sun shone quite warm for several hours. The bees took advantage of it and had quite a time house or hive cleaning. There was an unusual amount of dead bees at the entrance of quite a number of my hives. There was an old gentleman came in the midst of their flight; conversation soon turned on the subject of bees. He said if they did'nt have plenty to eat that I could feed them by baking salty ash-cakes and putting them under the "gums" as he called them. He also said that if I would move each "gum" just a few inches once a week that the moth would not trouble my bees. He looked around at my bees in astonishment and said that in a good year I surely ought to get two or three hundred pounds of honey. I said,

you mean two or three thousand pounds, don't you? He didn't know what to say. I don't suppose that he ever heard of that much honey before in his life. I showed him in my honey room. He was amazed. I think when he left he was satisfied that I knew more about bees than he did. I have fifty colonies now, not in altogether as good condition as I could wish. I only got about two hundred and fifty pounds of honey this year all told.

Salado, Texas, Dec. 27, 1878.

Gleanings in Bee Culture.

Brood Combs—Some practical points by Dr. C. C. Miller.

How many cells to the inch? How thick are they? How long does it pay to keep them? etc.

On page 898, friend Root, you straighten me up as to the size of worker-cells, for which I am obliged. I had Cheshire's book and the A B C for authority. Let me, then, amend the figures, counting 24 cells to five inches. At that rate there are 26.6 cells to the square inch, so that it will be nearer the truth to say there are 27 cells to the square inch than to call it 25. In order to make foundation which should contain 25 cells to the square inch, we must have 4.65 cells to the inch, or cells of such size that 23¼ cells, side by side, shall measure five inches. These are not matters of the greatest importance, but we may as well have them nearly correct.

Thickness of worker-comb.

How thick is it? I have been very unfortunate in my search, or else the books are very silent upon this point. Dzierzon, in his book, calls it about an inch in thickness, and Prof. Cook, in his *Manual*, says: "The depth of the worker-cells is a little less than half an inch." I think in general it is considered about seven-eighths of an inch. I measured an empty comb, in which probably not more than two or three generations of brood had been raised, and it measured just seven-eighths of an inch, as nearly as I could tell with a common rule. Then I measured one black with many years' service and it measured a full inch in thickness. In the first case the division wall was a very thin affair; but in the old comb it was an eighth of an inch in thickness, the additional thickness being made up of successive layers left by the many generations of brood. This difference in thickness, along with some other things, makes me think it possibly worth while to reconsider the question.

At what age should brood-combs be renewed?

I had laid this upon the shelf as a settled question, saying that I had used combs twenty-five years old and could see no difference between bees raised in them and bees raised in new combs. But if, in the course of years, a lining is left in the cells sufficient to increase the division wall an eighth of an inch, may there not have been a difference in the size of bees raised that would have been noticed by a more careful observer? Not long ago a writer in *The Ladies' Home Journal* advised, if I remember rightly, that brood-combs more than two years old should be renewed. Undoubtedly that is rather wild advice; but in the *British Bee Journal* for Nov. 10, 1887 (and the *B. B. J.* is not addicted to giving wild advice), occurs the following: "We may fairly suppose that three batches of brood are hatched from the same cells—taking the brood-nest only—in every season. In five years, therefore, we shall have fifteen layers of exuviæ in these cells provided they are not removed by the bees, which experience seems to prove they are not. The brood-cells, consequently, are much reduced in size at this age and the bees reared will be small in size. We have used the same combs for fifteen years without a break, when the brood-cells became so diminutive that the bees hatched therefrom were a pigmy race and the combs were as black as Erebus, and pollen-clogged. This was before the days of foundation. With our present advantages we do not think it profitable to use combs longer than four or five years." Dzierzon, in his book, p. 28, says: "The more frequently a comb has been used for breeding, the darker will be its color and the thicker the walls of the cells, the latter becoming more and more narrow and less and less fit for use, so that in time it becomes necessary for the combs to be renewed, although in case of need the bees themselves partly remove the casings, or even pull down the cells entirely."

Now, I suppose there are a great many like myself, with combs by the thousand more than four or five years old. We do not want to have the trouble and expense of renewing all these; but if there is any gain in it, we must do it. Although some of these things have somewhat shaken my former views, I confess I am anxious not to be convinced that it is necessary to remove combs four or five years old, and will be obliged for any facts that may help to stiffen my faith.

Looking at the old comb an inch thick and pulling it apart, I find it has a division wall made chiefly by the successive deposits left by the brood at the bottom of the

cell, these deposits in each cell being about a sixteenth of an inch thick. If such addition were made to all parts of the cell walls, the cells would be each one narrowed about an eighth of an inch, making the cell less than half its usual diameter; and it is easy to believe that bees raised in such cells would be a "pigmy race." In the comb under examination, however, I find that the addition is only at the bottom of the cell—at least, the addition to the side wall is very trifling. Is this the general rule, that, in old comb, the bottom of the cell is gradually filled up but that the diameter of the cells remains practically unchanged? If this be the case, then perhaps we may conclude that the only matter necessary to consider, as combs grow old, is to see that sufficient additional space is allowed between combs to make up for their increased thickness. Is any thing further necessary?

Marengo, Ill.

That "Prediction."

M. A. KELLEY.

ON page 130 of the API, you say, referring to making sugar from honey, "it can and will be done." And, again, near the bottom of the same page, you quote from a former API, "The extractor must go." Now, the point I am trying to make is this: Is said sugar to be made of comb honey? or must we return to the "days of our dads" and strain our honey?

Now, brother beekeepers of the API family, don't you think we have got the laugh or at least a small smile at the manager's expense?

But, in all candor, Brother Alley, there are some things that I do like about your advanced ideas on more than one point. In the first place I am not so sure but that "the extractor *must* go; but sugar from honey is away ahead of me yet.

I like your remarks on transferring. I always use and always have used twine for fastening in the combs.

Let me congratulate you on the score of making a first-class journal. I think the API as good as the best, and in one or two respects *better* than the *best* of all the other bee-papers I read. I do not write to flatter, for I think you are *above* feeling flattered by anything I might say.

As to honey-boards (which you say *must* go), I do not know how I should get along without them. They seem necessary to my present system of apiculture, but I may see cause to make a change. It may be best to call a halt as to so many fixtures.

The honey of the future must be produced cheaply. To do this the fixtures must be simple and cheap.

Now, I am no "cheap John," don't think it; but my opinion is that the inexorable laws governing supply and demand will surely bring honey down and keep it below the present moderate prices.

Bees in this county wintered with little loss. The indications were for a good harvest of white clover honey, but, alas! it rained the entire month of May. This month so far has been dry. The fogy bee men in the hills have been rejoicing over a great flow of honey-dew. They are welcome to all of such stuff so far as I am concerned.

White clover will soon be gone. Then comes our two months of starving time, for our bees get nothing here for about that time in midsummer.

Milton, W. Va.

Written for the American Bee Journal.

Foul Brood.

JAMES A. CLARK.

Theories of the first cause of the disease.

As to what may be the first cause of foul brood I believe no theory has as yet been advanced that will satisfactorily cover all cases.

The theory of Cheshire, that it is caused by bacilli or minute vegetable organisms, is the one generally held by those who have studied the disease. If we accept this, we must suppose that all cases of foul brood are traceable to infection from some first case or cases. Bacilli can no more grow without seeds than corn or wheat. It seems somewhat difficult to account for all cases on this supposition, although if Cheshire's theory be true, that the bacilli or spores may be deposited by the bees from infected hives on the blossoms they visit, to cling to and be carried away by other bees that visit the same flowers, we can easily see that the disease might be quickly spread over wide reaches of territory. The intervening links might then be destroyed in some way, leaving cases of foul brood apparently many miles away from any source of contagion. Even without this way of spreading, the disease may be carried far and fast by swarms escaping to the woods, and by robbing.

The credence given to Cheshire's conclusions is no doubt largely because they are in accord with what is known as the "germ theory" of disease. This is very

captivating, very plausible, and a very convenient pair of shoulders on which to lay the burden of most of the diseases that afflict the inhabitants of this mundane sphere.

It is not my intention to attack this theory. Apparently it rests on too firm a foundation to be overthrown. The whisper, though, is not unheard in scientific circles, that over zealous investigators have sometimes taken effect for cause, in concluding that because bacilli accompany a disease they necessarily produce the disease.

There are objections to the bacillus theory in the case of foul brood. One is, that Cheshire declared himself unable to detect either bacilli or spores in honey, and gave it as his opinion that the disease was never, or at least but very seldom, transmitted by means of honey. So far as I know, no microscopist has had any better success in detecting either bacilli or spores in honey. Yet the almost uniform testimony of all who have had practical experience with it is, that it is through the medium of the honey that it is most frequently and surely transmitted. The most practical and successful methods of cure are based on this assumption, while those which ignore it have in practice proven uncertain and unreliable.

Starvation as a foul brood cure.

Cheshire declares, furthermore, that foul brood is not simply a disease of the brood, but that *bacillus alvei* affects the mature bees, both workers and queen. If so, they are very easily disposed of, for I have repeatedly cured the worst cases of foul brood by simply confining the bees without food for forty-eight hours, then putting them into a clean hive, and still more simply by brushing them from their infected combs into a clean hive, where they were obliged to build comb before brood could be reared.

The plain inference is, that the contagion, whatever its nature, is contained in the honey, and that it is destroyed when the honey is digested. Possibly the digestion of the last particle of the honey does away with the bacilli so numerous in the vitals of bees and queen; but many will be inclined to doubt.

All attempts to get rid of foul brood without boiling or equivalent treatment for everything except the bees, have proven tedious, uncertain and unsafe. By "equivalent treatment," I mean a thorough washing or admixture with carbolic or salicylic acid. To spray the outside of an infected comb is useless. While it is possible that the fumes of sulphur may be a sufficient disinfectant—though I do not believe it—the process must be more thorough than that recommended on page 539. To put infected hives and frames out of doors in the summer—exposed to the bees—as there recommended, and then depend upon scraping and sulphuring, is simply to invite destruction.

The correspondent on page 538, has very evidently had little experience with foul brood, or he would not venture so wild an opinion as that it is caused by the larva getting reversed in the cell, and that the puncture in the cap of the cell is made by its "sharp end" in the effort to get out.

The fact is, that foul brood nearly always attacks the larva before it is old enough to be sealed up. Even when it is attacked after it is sealed, the cap is by no means invariably punctured nor perceptibly sunken.

Ropiness the test of foul brood.

The best test of foul brood is the ropy, tenacious, *slightly* elastic condition that the diseased larva assumes. Do not expect, though, that it will "snap back into the cell like a piece of India rubber when you pull it out with a stick," as some have said. I was not in favor of this test once, simply because too much stress was laid on the elasticity of the diseased matter. Remembering that its elasticity is but slight, this feature becomes our best criterion.

Dayton, Ill.

Bees as Educators.

Educated eyes.

No sooner does a person become the owner of a colony of bees than he looks around to see what are the prospects of future gain. Heretofore he drove or rode along the highways, noticing the ruts, bridges, fences and houses, but now his vision takes in a wider range. His observation is quickened, and trees, shrubs and plants have put on new life, as it were, to his enlivened faculties. From the first opening buds in spring, until the last rustling leaf has fallen, his interest never lags as he constantly watches the opening flowers, and notes with pleasure the busy workers roaming over them in quest of treasure to store in their hives.

Nectar in weeds.

What was to him once a useless weed, to be cut down with the scythe, or whacked off with a hoe, is clothed in beauty and becomes a priceless treasure. Whoever saw any beauty in the figwort, or watched for the appearance of its tiny cupboard, looking down into its depths for the first appearance of sparkling nectar, but a beekeeper? Or whoever saw any utility in Spanish-needles, or beggar-ticks?

There is a bond of friendship existing between the beekeeper and nectar-bearing plants, and they appear to spring up to greet him wherever he goes. The Indian calls white clover "The white man's foot," and well he may, for its modest flower soon appears as the harbinger of peace and plenty.

Soils.

The interest thus awakened in plants soon takes a wider range, and extends to the soil. Seeds of white clover (melilot) are scattered on gravelly soil, take root, penetrating deeply, keep it from washing and dying and add to its fertility. Dreary wastes thus become clothed with verdure, adding to the beauty of the landscape and yielding choice nectar, fit food for gods. On a recent trip of a dozen miles on a railroad leading out from this city, we were agreeably surprised to find this plant growing luxuriantly nearly the whole distance, and some deep cuts were so covered with it that the soil could not be seen. It is to be hoped that the officers of railroads will appreciate the utility of this plant in keeping the soil from washing away and preventing damage and danger thereby, and foster its growth. I have seen the yellow variety of this plant growing on the borders of salt marshes on the shores of Long Island Sound.

Moisture.

Marshes and wet lands along rivers and water courses, come in for a share of attention by the beekeeper. His eye quickly detects anything in the interest of his winged stock. If by digging a ditch and running off water, the growth of favorite bee plants is promoted, it is done. He then benefits his neighbors as well as himself, for, as the ground becomes dry, bluegrass and the clovers will take root, thus promoting grazing for stock, and malaria will disappear. New plants will spring up as if by magic, the button-bush (*Cephalanthus occidentalis*) growing in water. It seems as if the seeds of honey-plants rattled from the beekeeper's clothes. The seed of many honey-plants is food for birds, which are our friends and coworkers in destroying many noxious insects.

Educated ears.

As seeing is cultivated by bee culture, so is hearing — even all the senses are quickened, much better than they can be in a kindergarten. How soon the trained ear discovers the note of the robber, the sound of swarming, the piping of queens, and the happy hum of plenty, or the sorrowful moan when the queen is lost. The sense of smell reveals the blooming of apples, as also the opening of the fragrant basswood, buckwheat, etc., and reveals the presence of that dire calamity, foul brood. — MRS. L. HARRISON in *Prairie Farmer*.

By the Manager.

Carniolan and other Races of Bees.

On another page may be found a most interesting article from the pen of Mr. L. Stachelhausen on the Carniolan bees. The description as to color and characteristics of that gentle race of bees is correct in every particular, and just exactly as I found them. Some ten years ago I imported several queens of this race, and I am quite sure that they were the only *pure* Carniolan queens that ever came into the United States They handled as easily as so many flies, as far as stinging was concerned. I found them fair workers when they would work a few days without swarming. It made no difference whether they were gathering honey or not about swarming; they were in that respect the worst race of bees I ever had any experience with, and I have had about all the new sorts that have come into this country.

As Mr. Stachelhausen says, and as I have frequently stated, the pure Carniolan bees are not the race of bees that American beekeepers want. Several parties who speak in high terms of this race, and claim to have pure bees, do not have them, and in my opinion not one of those who have them for sale ever saw a pure Carniolan bee. If they do have them, they must stretch the truth wonderfully when speaking of their good qualities.

I want to inform those parties that pure Carniolan bees show no *yellow* bands. The color of true bees of that race is whitish, or more like in color to new cast-iron. No doubt the race, or strain of bees most dealers sell for pure Carniolans, are as good as they claim, but they are not a pure race of bees all the same. All the good points they possess are derived from the Italian blood by which it is evident they are crossed. I do not believe that there are more than two beekeepers in this country who ever saw *pure* Carniolan bees, nor do I believe there is a pure queen of that race in the United States. I do not care whether Frank Benton sent them here, or whether they came from some other person. If people depend on Benton for pure queens they will get awfully deceived.

The statement that there are no pure Carniolans bees in this country, may cause some dealers to say "cuss" words, but the assertion is true all the same. There is no race or strain of bees that is superior to or any that equals the Italians—the *American* Italians I mean.

The suggestions made and the hints thrown out by Mr. Stachelhausen in his article are of great importance, and should be noted by all who desire to improve the condition of their apiaries. No article that

has ever appeared in the APICULTURIST is of more value, or of more interest to the average beekeeper than the one in question. There is not a beekeeper who cannot put these suggestions into practical use, and sooner or later be greatly benefited thereby.

How to rear good queens.

To the beginner who would like to rear a few good queens for his own use, I offer the following method of securing them:—

Select the best colony, and if there is little or no honey coming in from the flowers, feed this colony every evening, a little more than the bees will consume during the following twenty-four hours. Continue the feeding for a week, or until the colony is in a thrifty condition; then on any afternoon, remove the queen.

On the fourth day after removing the queen, open the hive and examine the combs carefully; if there are cells sealed, open them and examine the larvæ. Do not molest those not sealed. Replace the combs, and on the twelfth day from that on which the queen was removed, open the hive and cut out all the queen-cells but one, and put them where they are needed. Be sure to continue the feeding until the cells have been taken ont. If you stop feeding, and there is no honey coming from the flowers, the bees are liable to destroy all the cells except two or three.

In the above way the queens will all be reared from eggs or larvæ less than twenty-four hours old, and the food from the cell from which the larvæ were removed can be given to the larvæ not yet sealed. This plan will produce good queens, and is much safer and more economical for the beginner than to purchase queens and take the risk of introducing them.— S, A. SHUCK.

Any old queen dealer will soon discover that the author of the above has had but little experience at rearing queens. He says, " In the above way all the queens will be reared from the eggs or larvæ less than ten days old. Larvæ, my dear man, are just what queens would be reared from by the method you give, and that is just what they should not be reared from. When bees follow nature, that is in natural swarming, they select an egg from which to rear a queen and never a larva. I must say that I am surprised to see that no one had " shown up " the fallacy of the above method for rearing queens. Where was the editor? He must have been away or asleep. Such stuff should not be permitted to go into print, unless the editor puts a footnote at the bottom giving some reason why he gave space to such an article.

Here is another wonderful piece of information found in the same article: " Be sure to continue feeding until the cells are taken out. If you stop feeding, and there is no honey coming from the flowers, the bees are liable to destroy all the cells except two or three." What perfect nonsense! The writer further says, " this plan will produce good queens." I say that most queens reared by that plan are as worthless as any thing can be. So far as selecting and feeding the best colony in the yard to get them in condition to rear queens the writer is right. No doubt the author of this wonderful method for rearing queens has read the Beekeepers' Handy Book.

In another issue of an American bee-paper, a man well-known to us, criticises the foregoing method of rearing queens, and then gives a plan that, to me, seems even worse than the one he criticises. Here it is:

At any time when bees carry natural pollen, and the drones are out, or will be at the time the queens will be old enough to make her bridal tour (early in the spring, summer, or late in the season), take the queen from a strong colony, then wait eight days, and cut out every queen-cell and insert a frame of eggs, not larvæ. Be sure that there is not one egg hatched. This is the secret, not *larvæ* but *eggs*. About treble the number of queen-cells will be constructed, and the queens will be of the very best! The longest lived queens that I ever had were reared accord, ing to the above method.

Here it will be seen that a colony is compelled to rear two lots of cells in order to get one batch of queens. Did the reader of this ever try the experiment of rearing two broods of chickens by using the same hen six weeks in succession? What was the result? Just no success at all. Every experienced queen breeder will tell that man that he cannot rear good queens by any such process, and every queen dealer knows that only one set of cells can be reared by the same lot of bees and have the queens first-class. What is nature when applied to queen-rearing? Why, the bees select an egg for the queen and not larvæ, except when forced to do so by removing the queen, as in the first method given.

I will ask the author of the last method given for rearing queens these questions. 1. What is the advantage of keeping a colony queenless eight days and then supplying the eggs? Why not deprive the bees of their queen, and in the course of *twelve hours* remove all the brood and place the eggs in the hive? Try it and see if the plan does not work much the best. Why put a whole sheet of brood, or eggs rather, in the hive and let the bees build cells in that way? Can't you think of a much better plan? Don't you know that such a method as you recommend is one of the things of the past? Is there nothing connected with queen-rearing but to furnish the bees a few eggs to build cells from? It strikes me that there is a great deal more to it.

How to prepare sugar syrup for feeding bees.

As some colonies need more sugar than others to carry them through the winter, I have found no better rule for preparing the syrup than this: If a colony will need, say fourteen pounds of sugar, place that quantity in any kind of a vessel. Now mark on the inside the vessel where the top of the sugar comes and add boiling water until all the sugar is wet and the water rises to that mark. Stir the mixture occasionally until all the sugar is dissolved, then add a pint of water and two pounds of good honey. The syrup will be slightly thinner than it should be to cap, but the small quantity of water it contains will soon be evaporated by the heat of the colony. The honey added will prevent the sugar from granulating and make the syrup more palatable to the bees.

Those who use this receipt will not complain that syrup granulates in the combs.

This syrup should not be exposed to robber bees, as it will induce robbing as quickly as clear honey.

Where hives have caps that will exclude bees, I know of no better way for rapid feeding than to remove the honey-board, or quilt, and place a pan on the frames that will hold four or more quarts of syrup. Fill the pan and put some sticks or straw in, to prevent the bees from drowning; a bridge should be provided so the bees can reach the top of the pan to get the syrup. When a colony has a sufficient amount of food, the winter packing should be put on thus keeping the combs warm until the water is evaporated from the syrup.

A bee-swarming conundrum.

A New Jersey bee man is exercised over a possible dilemma in which his swarming bees may place him with one of his neighbors. Some of his swarms have ignored land lines and settled on a neighbor's premises. The neighbor has become "tired" with such trespasses by wandering colonies of bees and the man trespassed upon has notified the bee owner that if any more of his bees alight upon his premises again he will drown or burn them. The man is attached to his bees, is pained at their peril by water and peril by fire, and wants the editor to tell him what to do in such an emergency. Brother Root gives him some wholesome advice and intimates that there is danger of the correspondent and his neighbor getting up a greater disturbance than a runaway swarm of bees could do, if they happened to go in the right direction.—*Exchange.*

A few dollars invested in queen-traps would have prevented the loss of any bees or trouble among the neighbors. Brother Root did not have the trap in mind when he gave the good advice. Use the trap, friends, and there will be no occasion to go into the neighbor's land to get your bees when they swarm.

Selected.

Races of Bees.

Bees are not native to America. The first race introduced was the black or German bee. We often read in the bee journals of a large, brown bee, which was indigenous to this continent. I think that any such bee is only a variety of our common black bee which was introduced into America long years ago, and so has become widely distributed and it would not be strange if color variation had taken place to quite a degree.

The black bees are described by their name, though they often appear gray because of their hairy covering. The black bees have some well-marked characteristics: They are restless; when we hold a frame of comb covered by these bees before us, they are ever running rapidly about and constantly dropping off the comb. The black bees are also irritable, and thus quite likely to sting unless considerable care is exercised. The good points of the black bees are: They cap their honey thicker, and so comb honey from them is very white; they are very ready to go into sections or a surplus chamber on top of the hive, at the dawn of the honey harvest. This point is especially prized by many of our best beekeepers. This fact leads many of our wisest apiarists to desire at least some black blood in their bees.

The Italian bees are often spoken of as the yellow race, owing to the fact that the hinder part of their body—the abdomen—of the queen and drones especially, is often wholly or nearly all yellow. The worker bees, too, of this race, if pure, will all have three bright yellow bands on their abdomen next to the thorax. When an Italian bee is full of honey these bands will all show distinctly. Owing to this fact the Italian bee is very handsome. The Italian bees are very amiable, are quiet on the combs when handled, possess longer tongues than do black bees, are more energetic and prolific, but do not make quite as white comb honey, nor are they quite as ready to enter the surplus cases when the season opens. The Italian, owing to its amiability, is like the Carniolan, peculiarly the bee for the beginner.

The Carniolan bee is probably a variety, or at least an offshoot, of the black bee, which it very closely resembles. It is peculiar in being the most amiable of all the races of bees. With reasonable care in handling it will rarely sting. The Carniolan bees seem very good for honey, but are a little too ready to swarm.

The Albino bees are simply a sport from the Italians. We often find colonies among our Italian bees that look very white, owing to a superabundance of white hairs. Some breeders have bred with this quality in view, and have emphasized this peculiarity. These parties claim superior excellence for this variety, but after several trials I only praise the Albino bees for their beauty and amiability. I have always found them poor honey producers.

The Cyprian bees are much like the Italians in appearance. They are from the Island of Cyprus, and doubtless are a distinct type of the yellow race of bees. They have some persistent marks which makes it easy to determine their identity. In temper, they are very cross, but like most cross bees, they are excellent honey producers. Many European beekeepers esteem them as the best honey gatherers.

The Syrian bees look much like the Cyprians, but are easily distinguished by any experienced beekeeper. I have had considerable experience with these bees, and like them very much. I am now carefully crossing Syrians with Carniolans, in hopes to get the vigor and prolificness of the former and the amiability of the latter. I believe some such cross will give us the ideal bee. As bees, unlike cattle, are all reared for a single purpose, there is no objection to crossing them. Indeed, I believe one of the greatest lines of progress lies in this direction. If we can rear a race with the amiability of the Carniolan, the vigor and fertility of the Syrian, which shall also have the excellence of the black bee as a producer of comb honey, we shall surely make a great advance.

A. J. Cook.

Michigan Agricultural College.

Bees vs. Fruit.—Report of special agent McCain to Entomologist of the Department of Agriculture:

"I have, according to your instructions, repeated my experiments of last year for testing the capacity of bees, under exceptional circumstances, to injure fruit; adding such other tests and observations as the severe and protracted drought permitted. The house used last season, 10 feet by 16 feet in size, having sides partly covered with wire cloth and large screen doors in each end, was used again this year. Two colonies of Italian bees, two of hybrids, one of Caucasians, and two of Syrians were confined in this house.

These colonies were without food in their hives, and at intervals of three or four days were fed a little syrup for the purpose of keeping up their vigor and to prevent dying from starvation. A woodstove was placed in the house and a high temperature was maintained for a number of hours each day.

The conditions incident to an unusually severe and protracted drought were present within and without. The bees were repeatedly brought to the stages of hunger, thirst, and starvation, the test continuing for forty days.

Through the favor of Mrs. T. T. Lyon, president of the Michigan State Horticultural Society, I obtained thirteen varieties of choice grapes from A. G. Gulley, of South Haven. Every inducement and opportunity was afforded the bees to appease their hunger and thirst by attacking the fruit which was placed before them. Some of the bunches of grapes were dipped in syrup and hung in the hives between the combs, some placed before the hives on plates, and grapes were suspended in clusters from the posts and rafters. The bees lapped and sucked all the syrup from the skins, leaving the berries smooth.

They daily visited the grapes in great numbers, and took advantage of every crack in the epidermis or opening at the stem, appropriating to their use every drop of juice therefrom, but they made no attempt to grasp the cuticle with their mandibles or claws. I removed the epidermis carefully from dozens of grapes of various kinds and placed them on plates before the hives. The bees lapped up all the juice on the outside of the film surrounding the segments of the grape, leaving this delicate film dry and shining, but through and beyond this film they were not able to penetrate. I punctured the skins of grapes of all kinds by passing needles of various sizes through the grape and placed these before the bees. The needles used were in size from a fine cambric needle to a jacking needle. The amount of juice appropriated was in proportion to the size of the opening in the skins and the number of segments of the grape broken. The same was true in the case of grapes burst from overripeness. Bees are not only unable to penetrate the epidermis of grape, but they also appear to be unable, even when impelled by the direst necessity, to penetrate the film surrounding the berry even after the epidermis is removed. Grapes so

prepared, without exception, lay before the hives until dried up. If but one segment of a grape be broken by violence or by overripeness the bees are unable to reach the juice beyond the film separating the broken from the unbroken segments until further violence or decay permits an entrance for the tongue. Clusters of sound grapes which I hung between the comb frames in hives occupied by strong colonies were unbroken and sound after fifteen days exposure in the hives. The skins were polished smooth, but none were broken. I also stopped up the entrance to several hives—containing good sized colonies—in the apiary and in the wire-covered house, by pushing sound grapes into the opening, so close together that the bees could not pass through. By this means the bees were confined to the hives for days in succession, not being able to break down and remove the grapes, and although the skins of the grapes next the inside of the hive were polished smooth none were broken or injured.

The past season furnished an excellent opportunity to observe the capacity of bees, under so exceptional circumstances, both in duration and severity, and I was called to several places by fruit growers to witness the proof that bees were "tearing open the skin of the grapes" and otherwise behaving in a manner altogether unworthy of an insect enjoying a wide reputation for virtue and orderly living. In each instance I succeeded in convincing the fruit-grower that the bees were simply performing the office of gleaners; that violence from other sources, or overripeness and decay had preceded the bees, and that he would be acting the part of wisdom in following the example of the bees in gathering the grapes before further violence, or the action of the elements, rendered them worthless.

After grapes have been subjected to such violence, or have so far burst open and decayed as to make it possible for bees to injure them, and the circumstances are so exceptional as to lead the bees to seek such food, unless they are speedily gathered they would soon become worthless if molested. During the past season I made many visits to vineyards. One located near the apiary I visited every day, and my observations and experience with bees in confinement and those having free access to the vineyards furnish abundant proof to convince me that bees do not and cannot under any circumstances injure sound fruit. If from any cause the pulp is exposed, as from the attack of birds or wasps—the most common source of injury—or from the ovipositing of insects, or bursting of the berry from overripeness, and if no other resources are available, the bees appropriate and carry away the juice, and the extent of the injury depends upon the degree to which the pulp is exposed, the sweetness of the juice, and the number and necessities of the bees."—*The Southern Farmer.*

Poor seasons are Blessings.

JAMES HEDDON.

THE last two very poor honey seasons will, I am confident, prove a blessing to beekeepers. It has given us old veterans a splendid education; it has taught us how to make the most of disaster; it is a valuable acquisition to know how to make the most out of our business when good luck favors us, and it is also equally valuable to know how to make the most during disastrous seasons. Besides this, the markets are cleared out, consumers are getting the habit of paying a little more for their honey, and better than all, producers as well as consumers, are finding out that bees do not "work for nothing and board themselves," but that intelligent labor and capital are needed to make our business remunerative.

The quality of honey in this section is some better than that of last year. We shall strive to winter our bees to the best of our ability, believing that honey-production offers more inducements at the present time, than at any time during the past few years.—*Am. Bee Journal.*

Refining beeswax.

J. D., MOOERS FORKS, N. Y. "I want to know how beeswax is refined so as to clear it from all foreign substances." It is done by melting the wax with about four or five per cent of water in a bright copper boiler, preferably heated by steam, and, after the whole is perfectly liquid and has boiled for some minutes, withdrawing the heat and sprinkling over its surface a little oil of vitriol in the proportion of about five or six fluid ounces to every hundredweight of wax. Great care should be used, else the melted wax will froth up and boil over the sides of the pan. The acid should be well scattered over the surface. The melted wax is next covered over and left some hours to settle, when it is carefully drawn off for moulding without disturbing the sediment.—*New York World.*

How combs become "travel-stained."

At the Chicago convention, Professor Cook explained how a bee uses its sharp claws to gain a foothold upon surfaces where such climbers are available, while upon smooth, hard surfaces it gains a footing by throwing out a glutinous fluid. Mr. A. I. Root suggested that it is this fluid that discolors the white combs, giving them that reddish-brown appearance, called "travel-stain." At the late convention of Ohio beekeepers, it was further suggested that wood separators possess one superiority over those of tin, in that the bees can more readily gain a foothold upon them, hence would use them as a highway instead of climbing the combs. We have never used wood separators, have had no opportunity for making any comparisons in this direction; but in regard to the bees maintaining their footing upon combs by means of this mucilaginous fluid we have our doubts. Comb is not smooth and hard. Mr. Cheshire says it is "extremely rough, and, under a quarter, as irregular in surface as the mud wall of barbarism." Further than this, comb, in the hive, is warm and soft, and it strikes us that, of all things, this rough, soft, warm wall would be exactly the thing in which the sharp, delicate claws of a bee could be used to the best advantage. But we will drop theory and come down to hard facts. In our method of "feeding back" extracted honey to secure the completion of unfinished sections, the combs nearest completion are placed next to the brood-nest, and we were not long in discovering that those colonies must be chosen having new combs, otherwise the nearly completed sections were soon soiled. Over new, white combs, built within two or three months, the finished sections could remain several weeks with no signs of travel-stain, while one week's proximity to old, black brood-combs would leave discolorations. The simple act of bees walking over combs does not discolor them, but the passing directly from a brood-nest of old, black combs to white combs does stain the latter if it is long continued, and the moral is to raise comb honey upon the tiering-up plan, and then the finished combs are never near enough the brood-nest to become soiled. —*Review.*

Prepared to recommend them.

Milan, N. H.

Mr. Alley: I have used your drone-and-queen traps this season and feel prepared to recommend them.

A. D. Ellinwood.

Food for wintering Bees.

Dr. L. C. Whiting.

I always expect my bees to winter well if the honey is good and well ripened. I have sometimes thought that, if the honey was very thin, they wintered better out of doors than in a cellar. One season here, when the honey was poor, one of my neighbors put all his bees (nearly 100 colonies) in an above-ground cellar. It was warm and all the honey soured and every swarm was lost. I had about the same number of colonies out of doors and lost half of them from the same cause. All of my strong colonies were lost, while most of the small ones survived. At the time I came to the conclusion that the small swarms did not get up heat enough to sour the honey. Since then I have been in the habit of extracting all unsealed honey and mixing with it enough sugar to give the desired consistency.

Good food, air enough to keep the bees dry, and to have them out of reach of cold winds, are what I aim at when wintering bees out of doors. If, in addition to this, they can be well packed with chaff or planer shavings, all the better. Good food, I count nine points in ten.—*Review.*

East Saginaw, Mich.

Mr. Benton and the Carniolans.

I first had Carniolans in 1881. They were all true to colour. I saw several also that belonged to a friend, and never saw a "banded" bee amongst them. None of these came from Mr. Benton. The past three years he has given them more "banded." Moreover, the first cross between a black and a Carniolan were always quiet. This is so now occasionally; but, on the contrary, sometimes they are as fierce as any of the crosses with the yellow bees. The Italians were not ruined in temper till Cyprians were taken to Italy to improve the color of the gentlest bee then known. Mr. Benton has told us that yellow bands sometimes appear amongst the native bees in Carniola. I hope he is not to blame for it, for I do find that some of the "mongrels" so marked are not as amiable as the earlier and truer marked Carniolans used to be, and it would be an infinite pity that such a good race of bees should be ruined by improvement (?).— *British Bee Journal.*

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Selected.

Reproduction in the honey-bee.

By PROF. GEO. G. GROFF, M.D.
Lewisburg, Pa., Apiarist of the Board.

To the naturalist the means by which living beings reproduce their kind is always a subject of interest. Indeed, of all the functions of life, that of reproduction is the most interesting, the most wonderful, and to each species, the most important. Some forms of insects seem to exist in the mature state only that they may perpetuate their kind, and this being accomplished, they perish; the males in the act of fertilizing the females, the female, at once, when the eggs are safely deposited, neither parent ever seeing their offspring. In all the higher animals reproduction is accomplished through the intervention of the two sexes, the male and the female, but among many of the lower forms of life both male and female are frequently dispensed with. In some cases the offspring pass through so many and so great transformations that it has been exceedingly difficult to trace the whole life history of these strange beings. In some cases the germs of life are so small that their origin cannot easily be discovered, except with the most patient research. This is true of the honey-bee.

A knowledge of the modes of reproduction and of the laws governing the same is always of value to the agriculturist and to the naturalist, because in the case of the higher forms he may readily improve his cattle, grains, tubers and fruits by a careful study of and conformity to these laws, as is so well illustrated in the great number of valuable varieties introduced in late years. And also in the case of the lower forms of life, pests and all kinds of animals and vegetable parasites, if their habits, times and modes of reproduction be understood, we may often, with great ease, cut short the career of forms which, undisturbed, would have caused great losses. The different modes of reproduction in the organic world may be outlined as follows, viz.:

Modes of Reproduction.

Asexual: { Division, { Continuous. / Discontinuous. ; Budding, { Continuous. / Discontinuous. }

Hermaphrodite: { Close fertilization. / Cross-fertilization. }

True sexual { Oviparous, / Ovaviviparous, / Viviparous. } { Aplacental / Placental. }

The minute animals called animalcules which live in stagnant waters, in damp places, and in the sea, many cases reproduce their kind in some asexual way, *i. e.*, without the intervention of the sexes. Of these asexual methods there are two principal ones. In the first, the body of the parent splits into two or more pieces, which, by absorption of nutrition, rapidly grow into perfect animals. Sometimes the young remain attached to the parent germ, and then we have "continuous" division, and the resultant is a "colony" as is true of sponges, sea-mats and numerous other marine forms. In other cases the young are all set free from the parent organisms. Budding differs from division in that the young appear on the sides of the body of the parents as small buds or enlargements. They remain attached, growing larger and larger, until they become perfect animals in all their parts. When development is completed they either remain attached to the parent or else are set free to live independent lives, in the first case forming "colonies" as in continuous division. Coral colonies are formed in this way. In some of these lowly asexual forms the young are entirely unlike their parents, and at no period of their lives resemble them. These beings of the second generation bring forth young, which return to the original type, that is, resemble the grand-parents. This is called "alternation of generation." Jelly fish are such intermediate forms. Nearly all the lowest plants, as moulds, mildews, blights, etc., are asexual.

The next mode of reproduction is the hermaphrodite. In this, the sexes both exist in the same individual. This is the common mode in the higher plants, the male and female elements being in the same flower. The common earth-worm is a true hermaphrodite, as is the tape worm. In the earth-worm we have *cross-fertilization*, that is, two individuals reciprocally fertilize each other, while in the tape worm, which fertilizes its own ova, it is called close. Nature generally abhors close fertilization, or, at least, usually contrives that it shall not continue the permanent order of things with any group of beings. Thus, in plants the fertilizing pollen is carried to distant plants of the same species by the winds, or by honey-seeking insects.

The highest mode is the true sexual in which the sexes exist perfect in distinct individuals. To this group belong fish, reptiles, birds, mammals and many insects. The lowest class here is the oviparous, in which the eggs are laid by the female and then hatched by heat applied externally, as in insects, fish, reptiles and birds. Ovaviviparous animals produce eggs, but these are retained within the body of the female until hatched. This is true of some reptiles. In the viviparous mode the eggs exist, but are very minute, and development proceeds within the body of the female. The aplacental animals, opossums and kangaroos, bring forth their young in a very imperfectly developed state, while in the placental animals the young are much farther developed at the time of birth, as is true of all the domestic animals. *Bees are oviparous insects*, in which an egg is laid, which in time hatches into a worm (grub, larva or caterpillar). This after a time, spins a cocoon and becomes the quiescent pupa, and after a variable time the pupa changes into the imago or perfect insect. The honey-bee has always passed through all the stages of the egg, the worm, the pupa and the perfect insect.

In a perfect colony of honey-bees in the summer time we find one queen, a few hundred drones, and several thousand workers, of the last from 10,000 to 40,000. Now, that eggs and worms and young bees are found in bee hives was long known, but by what means the eggs were laid for a long time baffled the most careful observers. The queen bee was generally considered the ruler of the colony, and a *male;* hence, in Shakespeare, we read:

"They have a king and officers of state."

And in Virgil, the Latin poet:

"First of the throng and foremost of the whole
One stands confest, the sovereign and the soul."

The naturalist Aristotle has left a remark showing that some observers of his time, or possibly earlier, had a clew as to the origin of bees, for he says, "Some say that the rulers produce the young of the bees." About the time of Christ, Virgil, the poet already quoted, gave the following method for replenishing depleted beehives. A young bullock is to be killed by being suffocated. His body is covered with flowers and allowed to lie in a secluded place until it decomposes. Worms will appear in the putrid mass, which, in time, will hatch into bees, and then if the empty hives are near, the new bees will enter the same. Virgil states, however, that this is the method *said to be practised* in Egypt but some early English writers gravely recommended the plan as the correct thing to do.

To be continued.

The Life-work of Bees.

How much honey one bee can gather during its lifetime.

An experienced beekeeper writes: Although the subject of how much honey one bee may gather during its lifetime may have no very definite bearing upon the dollar-and-cent side of apiculture, still such an item may be made of interest to us if we look at it from the right standpoint. That one bee cannot gather 100 pounds of honey is one of the reasons that more than one bee is required in a hive, and because one bee cannot gather that amount nor one-ten-thousandth part of it, is the reason that the apiarist desires a large number of bees in his hives at certain seasons of the year. Some tell us "keep your colonies always strong," just as though a large number of bees in a hive at all times of the year was a thing of great value. But right here comes in another side to this "gathering" question. I have just said that one bee could not gather one-ten-thousandth part of 100 pounds of honey. My reason for saying so is that in this locality we do not have a yield of honey lasting through the length of life allotted to an individual bee; while many bees, yea, more than one-half which are reared under the most skilful management, never add an ounce to the surplus. If every bee reared could have a field of honey placed before it in which to labor, then the motto, "keep colonies always strong," would be the right one; but inasmuch as this cannot be, and as bees at all times must be consumers, no matter whether producing or not, I cannot see the philosophy of having a colony strong in bees at such seasons when

of necessity they can only be consumers. Thus right here comes in another factor in this question, which is the field or supply of honey. In reality we must begin with the field, or in other words place that first, for without the field or honey flow we have no use for the bees. With a continuous and uninterrupted honey-flow within two miles of the hive during the time which a bee lives, I think that a bee might easily gather one ounce of nectar, which would take only 1600 bees to gather 100 pounds. Of this amount it would take at least 25 pounds to supply the wants of the colony during the time that the bee was living, and unless the nectar was thicker than we get it here, it would take three pounds of this nectar to make one pound of honey. So then we should have 25 pounds of honey as the product of 1600 bees during their life with an uninterrupted flow of nectar. While this might be possible, yet there are two things which make it improbable: the first being, as already stated, that the honey flow does not continue long enough, and the second, that the yield would not be sufficient within two miles of the apiary so that the bees could work to the best advantage. In 1871, I had a colony which on May 25, I estimated to contain 4000 bees. This estimate was made by counting all the bees on a given surface of comb, and then dividing the amount of comb covered with bees by the space counted, when the quotient was multiplied by the number of bees counted on the first surface. The next day was a fine one, and apple trees were yielding honey as well as I ever knew them to. At 7 A. M. the bees began to go to work, and at 8 A. M. I found that on an average sixty loaded bees were going into the hive each minute. One was caught and killed, which I found upon dissecting had a fair sized drop of honey in the honey-sac. By a careful estimate and weighing I found that it would take about 3600 such bee-loads to make one pound so I concluded that 4000 bees were good for the gathering of one pound of nectar each hour, besides caring for the interior of the hive. Before a bee had left the hive in the morning, I had weighed the same so that I could tell, when night came, how much honey the colony had gained. They worked right along at the average rate of 60 per minute till 4 P. M., when they began to slacken up, and at 5 P. M. all had quit work for the day, as the sun had gone back of a cloud soon after 5 P. M. At dusk that night I weighed the hive again, saying, as I did so, that if my estimate was correct, it should weigh eight pounds more than it did in the morning. I found it weighed eight pounds and nine ounces, thus showing that I was not far out of the way. But what was a great surprise to me was that, when weighed the next morning, I found that eight pounds and nine ounces gain had gone down to three and one-fourth pounds, thus showing that the nectar just from the flowers was not all honey by any means. After this I became infatuated with the idea that there could be as much honey obtained from apple blossoms as from basswood, if I could only get the population of the hive up to 40,000 instead of 4000; so I began trying to get my bees strong early in the spring, but after an entire failure of apple honey for the next three years on account of cold rainy weather, I gave the matter up, only trying to get the bees strong, so as to take advantage of the generally good weather in the basswood harvest, as we have but little white clover here. The point I wish to make is: First we have the field or location we are in, of which we should have a thorough knowledge; next we have the bees to get in large numbers just in time to take advantage of the main honey-flow of our field; and, third, that a bee is of little value as a honey-gatherer only as it can be placed in the field of action just in the right time. In this way the quantity of honey which a bee can gather in a lifetime becomes of interest to us, that we may work assiduously to have that lifetime come when our field is yielding honey.—*Exchange.*

Written for the American Bee Journal.

Bee-Diarrhœa.

The result of experiments made to discover the cause of it.

By G. R. Pierce.

Query 564 reads thus: "During December, January and February of the winter of 1884–5 I lost 700 full colonies out of 900 located in five apiaries . . . . The frames and combs were badly smeared with excreta where there were a few bees and queen left . . . The winter of 1885–86 was the same with 600 colonies. The winter of 1886–87, all of 400 colonies came through to February. They commenced dwindling then, and went down one-third . . . The past winter has been the same. I have some fifteen or twenty colonies that have withstood all these winters, and have come out good every time under the same conditions. 1. Have you had this experience? 2. What is it? 3. How can I stop it?—Illinois."

The above is the substance of Query

564, on page 502. It was accompanied by the opinions of some twelve experienced apiarists as to the cause of the disease in question, and how to prevent it — a few to whom the query had evidently been submitted, not expressing any decided view on the subject. All who expressed any opinion were agreed in referring the trouble to bee-diarrhœa, and the cause improper food, but disagreed as to the manner of prevention. Some advise "Illinois" to feed pure cane sugar; some to keep the bees in a warm cellar; to deprive them of pollen, etc.

Doubtful cause of bee-diarrhœa.

I believe but very few persons who have kept bees in the northern states will hesitate in naming the disease referred to in the query as bee-diarrhœa; but as to the cause—that is the rub! That is the winter problem which has been discoursed upon in all the bee periodicals of the land during the past twenty years, and if there has ever been a clear, rational explanation given of the cause of this disease — the dread of the northern beekeeper—it is not yet manifest to the mental vision of the fraternity. The hypothesis of to-day does not become a theory to-morrow, but is kicked out to give place to the next plausible explanation that may be offered; in the meantime, the disease "gets there just the same," as sure as the winters come on—at least it does with the majority of beekeepers.

Facts discovered in experimenting.

I do not propose, in this article, to advance any explanation as to the cause of the trouble under consideration — this would require more time than I have at present at my command—but rather to bring forward some facts which I think have escaped the attention of some of the prominent writers on this question. I have indeed an hypothesis—as every beekeeper must have—to explain the cause of winter losses in the apiary, but for the present I must try to confine my remarks to certain facts which I have noticed while conducting a series of experiments undertaken with a view to discover some practical method by which bees could be carried through the winter with as little risk as is incurred by the stockman in wintering his horses, cattle, sheep or hogs.

We may boast to our heart's content of the great advance made in beekeeping; of our extractors, comb foundation machines and the superiority of the improved hives now in use over the bee-gums of our daddies, but after all the fact remains that the average winter mortality among bees is quite as high now as it was twenty-five years ago.

The winter of 1879-80 was very cold all through the northwest, and the losses among beekeepers were very extensive, especially among those who practised outdoor wintering. My own losses were so severe that I resolved to conduct a series of experiments with a view to arrive at some definite idea as to what was the cause of winter mortality among bees. I had for years taken much interest in this question; had read everything available on the subject; had tried nearly all methods and devices recommended in the bee-papers and books devoted to the industry; and had seen more or less of my bees die every winter and spring without being able to afford them any relief. I do not mean by saying this, that my losses were more than that of the average of beekeepers in the north—I do not think they were as high as the average; but I was losing more bees than I thought necessary to lose if the proper conditions of wintering were understood.

Different phases of bee-diarrhœa.

The solution of the subject under consideration naturally leads along three lines of thought, viz.:

1. What is it?
2. What causes it?
3. What will prevent it?

It might be supposed that the first question was known from the start, but this idea is an error, arising from the notion that diarrhœa is a specific disease, whereas it may be simply a corroborative symptom of some organic or constitutional derangement. Simple diarrhœa is *generally* caused by a sudden change in food or drink, or by the introduction of improper or vitiated alimentary substances; but it often occurs when the cause has not the remotest relation to food or drink. Medical writers recognize that distinction by treating of the subject under different heads — usually three — but as my education has been confined mainly to chemistry and *Materia medica*, I shall not attempt to explain all the different phases of the disease.

The quality of winter bee-food.

Now to return to the query, the question arises, did those bees have the diarrhœa in its simplest form, or was it exhibited in connection with some derangement of the bee system? If the former supposition is correct, then we may properly look to the food for the cause. If the latter, then the cause must be sought elsewhere. My opinion is that the disease, which is usually termed bee-diarrhœa, is the outgrowth of another disorder, and the cause of this is seldom, if ever, to be referred to the *quality* of the

food. I do not wish to be understood as saying, that if bees were fed impure food they would not have the diarrhœa, for they probably would. What I mean to assert is, that the *quality* of honey has nothing to do, in ninety-nine cases out of a hundred, with the bringing about of the disease in question. I am forced to this conclusion not only from experimental experience—which I have not time to set forth—but also from the following reasons:

First, when animals are afflicted with simple diarrhœa, the organs of the system are in a *relaxed* condition; there is no distention or inflammation. In bee-diarrhœa—so called—there is unmistakable evidence of *congestion* and inflammation. The bloated appearance evidently does not result from the accumulation of fecal matter, for it does not disappear after evacuation. It might be urged that the retention of the feces in the intestines for an unusual time would cause irritation which would evidently produce inflammation in the surrounding membranes. This argument seems very reasonable, but I am disposed to believe that it is not applicable to this case for the following reasons:

1. It has been proven repeatedly by direct experiment, that bees can be kept housed for six months or more, on stores of honey and pollen, without any injurious effect. 2. Bees often become diseased within two or three days after having had a cleansing flight. 3. The disease usually makes itself manifest within a short period of time. I have repeatedly seen colonies become badly sickened within ten or twelve hours after a previous examination, when, to all outward appearance, they were in perfect health. The second and third reasons, by themselves, prove nothing, but when taken together, tend to disprove the hypothesis that the disease is caused by fecal accumulation.

The impure-food theory.

Second, I disbelieve in the "impure food" theory because, when improper substances are taken into the animal system, nature acts *ab initio* (from the beginning.) When a young man commences to use tobacco, he does not smoke a box of cigars before feeling the unpleasant effects of the weed; the first cigar or pipe generally "lays him out" limp and pale, with his whole internal apparatus in open rebellion and spasmodic eruption. The farmer understands that, if he feeds green food exclusively to animals that have been fed upon hay, they will, for a time "have the scours." These are only a few of the many examples that might be cited to illustrate that wise provision of the creative power, by which all animals are warned against partaking of substances which would cause the system to become deranged, even if the derangement is only temporary, as in the case of a sudden change of feed.

Third. There is still another objection to the "impure food" argument. Even when the adult members of a species of animals are enabled, by virtue of their superior physical power, to eat food which may not be best for them, if the same food be consumed by the same species of immature growth, the evil effects will very soon become apparent.

Now in the case of bee-diarrhœa, neither the young bee just emerging from its cell, nor the one that has nearly completed its course of life, exhibits any indications of disease until nearly the middle of the winter, and very often not until the month of March.

To still further show the fallacy of the prevalent idea that winter mortality of bees is caused by improper food, let me illustrate by the following facts that have come under my notice while studying this question:

Experiments in wintering bees.

Suppose we take ten hives containing colonies of normal strength, both as to bees and honey. Let these colonies be left on the summer stands and protected from the weather in any manner that the experimenter may see fit, provided it is so arranged that the clustered bees may be examined from the *top*, with as little disturbance as possible.

Now if we examine these colonies, say on December 1, we shall find, if the weather is cold, the bees closely clustered in the front-centre of the hive, with the top part of the living sphere from three to five inches *below* the top-bars of the brood-frames; the distance below will vary according to the disposition of the honey stores and the depth of the frame. If the weather continues cold, the motion of the cluster will be upward, and in time the bees at the top will be in close proximity to the honey-board or quilt, whichever may be used to cover the hive.

Suppose these ten colonies are closely watched, and it is found that on January 1, four colonies are so clustered as to reach over the frame tops; this interval of time, December to January, we will designate *a*. On February 1, two more are in the same position, interval of time called *b*; still two more reach this position on February 15, interval of time *c*, and the last two on March 1, interval of time *d*.

Now, what I wish to bring to the notice of the reader is, that during the interval of time *a*, there will be no danger of any

of these ten colonies becoming diseased. During the interval *b*, if there is disease it will be among the first four colonies named; during interval *c* only among six; during interval *d*, only among eight. After March 1, if very cold weather is experienced, or if the hives are not properly protected, all of the ten colonies are liable to become diseased; but the chances of escape are in favor of those which were last to reach the top-bars and against the first.

The question arises, what has the position of the clustered bees to do with the bringing on of the disease, if the cause is to be referred to improper food? If the honey in the upper region of the hive is unfit for bee-food, why is not that below?

But let us try another experiment. Take a good, strong colony. It is no matter about the quantity of stores; and in place of the honey-board place over it an empty hive, or a box, without top or bottom, of the same dimensions as the hive. To prevent its being moved, light cleats should be nailed on the lower edge, or straw may be piled around on all sides except the entrance. Now lay a piece of oil-cloth on the frames, and over this tuck snugly a piece of heavy blanket or quilt. Cover with a heavy board to keep out rain or snow. As soon as the clustered bees reach the top-bars, take six one-pound sections of sealed honey, cut out entrance-ways in the sides, and lay them close together, side downward, in such a manner that the center of the clustered bees will be directly under the general centre of the sections. Replace the coverings, and do not disturb them until about the time they will have consumed most of the honey in the sections, when another course must be laid on, and so continue as long as the bees approach the coverings.

The result of this experiment will be, that the colony operated upon will be alive and in good health on the first day of April, or thereabouts, no matter whether there is pollen in the honey or not; no matter what kind of honey is used, only that it must be sealed, whether from white clover or buckwheat; gathered in the spring or fall, it makes no difference in the result. If anyone doubts this, it may be verified or disproved during the coming winter.

What the experiments prove.

These experiments, together with others not mentioned, prove conclusively to me that *quality* of food has seldom, if ever, any part in producing diarrhœa, so called; and acting upon this theory, I have been enabled to so prepare my bees that I have had no losses from this cause during the last five winters, and shall prepare my colonies for the coming winter with perfect confidence that they will pass that heretofore critical period in vigorous health.

If the reader of this article desires to know what name I would give the disease, I would say that I am not an expert at clinical diagnosis, therefore I have not unlimited confidence in my conclusions: but if he will, for the time being, throw aside all preconceived notions about ventilation, absorption, hibernation, pollen consumption, etc., watch his bees and read some standard work on catarrh, he may, or may not, come to the conclusion to name it *intestinal catarrh.*

How to prevent winter losses.

The main point, however, is to know how to prevent this trouble, and this can be done by the following:

1. Never stinting the bees in their supply of honey.

2. Keeping the hives so protected that the heat generated by the bees will be retained as long as possible *within the hive.*

I have no confidence in any system of wintering bees which does away with *hive protection*, not even when wintered in a cellar. The first cost is an item, but it pays well in the end.

Blairstown, Iowa.

From Gleanings.

Bee Stings.

What becomes of the part remaining in the flesh after the top is broken off.

I am requested by a subscriber to *Gleanings* to explain how the bee sting is removed from one's skin when broken off in the act of stinging. He suggests that, if it does not work out, it must be absorbed by the system; in which case he thinks that some beekeepers must be largely composed of stings.

The skin consists of two layers—the outer scarf skin, or cuticle, also called epidermis, and the inner true skin or corium, also *cutis vera.* The outer skin is made up of what is known as scaly, or pavement epithelium; that is, it consists of innumerable minute overlapping scales. The inner scales contain pigment in their substance, and thus the color of the skin. The albino has no pigment, and hence his skin is transparent, and looks pinkish, as we look right through and see minute blood-vessels filled with blood. The inner skin consists of an outer part, which like the cuticle, has no nerve, and so is not sensible to pain or touch. This is made up of white fibrous tissue and small involuntary muscles contract if the skin is chilled, and drawing the

skin away from about the hairs forms the well-known "goose-flesh." Beneath this layer, which is known as the reticulum, because of its intercrossing fibres, is the papillary layer. This is the very inner part of the skin. It takes its name from the fact that little teat-like processes—papillæ—push up against the outer part of the skin. The ridges seen on the inside of our hands are but the elevations of these papillæ. Into these papillæ from beneath come nerves and blood-vessels. Thus from here comes all nourishment to the outer skin; and here is the sensitive part of the skin. Thus, a bee to hurt us must push its sting through the cuticle and reticulated part of the corium till it pierces the papillæ, where the blood receives the poison, and the nerves twinge with its venom.

Now, as we understand the anatomy of the skin we can see now the sting, if broken off in the skin, is loosened and liberated. The scaly or outer skin, is constantly being worn off. When we bathe, the water often is clouded with these minute scales. The snake sheds its scales once a year; but we are doing it all the time. As these scales are constantly wearing off, any minute portion of sting which is held in them is also worn off and separated from the body. Even if a small portion of a sting is caught by the reticulum, the part would probably suppurate and loosen the sting, as is done with slivers that enter and are caught and held in the skin. We thus see that a beekeeper is not made up of stings, by any means.

In case of porcupine quills, which are barbed like a bee's sting, they are thrust through into the muscle, so that every move of the muscle pushes them; and as they cannot go back, they are pushed on. Thus a porcupine quill may pass some distance through the unlucky animal which has caught them in its tissues.

A. J. Cook.

Agricultural College.

Beeswax as hardware.

"Why is it that the hardware stores handle beeswax?" repeated a wholesale hardware dealer of New York the other day to a Scranton drug store keeper who had asked the question. "Well, I can tell you in a very few words. All through the South, where the most of our trade is, as well as in other parts of the country, the tin peddlers swap their wares for beeswax, which they get very cheap. They make a nice profit on their tinware in the trade, and they also get a profit on the beeswax when they turn it over to the retailers in hardware. The beeswax passes from them to the wholesale hardware men in the cities, and they ship it in barrels to New York. We often receive a notice from So-and-So that he has shipped a certain number of barrels of beeswax to apply on account. Beeswax is always a staple article, and it is just as good as the cash at all times, for I never saw a time yet when we could not get the cash for it.

Of course it sometimes fluctuates in price like many other goods, but there is always a steady demand for it at the market value. Before the patent hives and honeycombs came into use a few years ago, the wholesale price of beeswax was twenty-five cents a pound. Where large numbers of bees were kept the patent comb was used, and the consequence was that the bees did not have to manufacture any comb, and in the course of a year the production of wax decreased so much that the price went up to seventy cents a pound wholesale. It went even higher than that for a while, and then it fell again, but it has never got back to where it was before the patents were adopted. If it were not for the tens of thousands of small beekeepers who cling to the old style of handling bees, the price of beeswax would be more than one dollar a pound."—*New York Sun.*

Food for bees.

James Heddon of Dowagiac, Mich., in the "Ohio Farmer," gives a formula for preparing a food for bees which is highly recommended. It is as follows: Into a boiling pan put three pounds of water, heat it until it boils, and with a wooden paddle stir this boiling water as you sift into it ten pounds of granulated sugar. When it is all dissolved, and the syrup is boiling, pour into it half a teacupful of water, in which has previously been dissolved a large teaspoon level full of tartaric acid. Stir it a moment longer, and then remove it from the fire. This syrup will not crystallize if the acid is used in the proportion mentioned, and is of full strength, and the syrup is boiled as directed. Such syrup, when cool, is of the consistency of honey, and the bees store and seal it as readily as they receive it.

Saved by bees.

An exchange says: "Once when the Turks had begun to scale the wall of a church in Transylvania, a girl's wit saved

the people from capture and death. Behind the church was a little garden, and in it were a dozen bee-hives which it was the girl's duty to care for. Seizing a hive, she ran up on the fortress wall and hurled it down among the enemy. Again and again she repeated the process until ten or more swarms of maddened bees were stinging the Turks. They were blinded and dismayed, and, unable to cope with the insect foe, beat a hasty retreat. They had been discomfited by a girl's device."—*Am. Bee Journal.*

A few years since I met Mr. S. B. Parsons of Flushing, N. Y., the person who introduced the first Italian bees into America. In speaking of the draft riots in the city of New York during the Rebellion, Mr. Parsons said he was prepared for the rioters if they attempted to cross over into Flushing and invade his premises. Mr. Parsons' bees were located on quite an elevation, and it was his intention to send the hives down the bank into the crowd. Had the hives been filled with Cyprian bees, a whole army of rioters would have been easily put to flight.

Determining the sex of bee eggs.

M. S. Morgan, South Elgin, Ill., on Sept. 27, 1888, writes:

I am obliged to dissent from the commonly received theory that the volition of the queen determines the sex of her eggs. In my opinion, after her fertilization any one of her eggs will produce a worker, a queen or a drone, according to the purpose and manipulation of the workers. A proof that a worker-egg may be made to produce a drone, may be obtained in this way: Divide a colony, giving to the new hive, bees with sealed worker-brood only, together with a queen-cell. Be sure that there are no drones in the new hive. Now from a colony that has killed off their drones, select any one frame of entire worker brood having a few unhatched eggs; place this frame in the new hive; and I will guarantee that upon this frame will be found the elongated cells of drones, whilst in the colony from which it was taken, there will be workers only. The egg with the sperm attached produces a worker; the same egg with the sperm detached, produces a drone; the separation being made by the volition of the worker, and not by the volition of the queen.—*Am. Bee Journal.*

I believe Mr. Morgan is entirely wrong. The eggs that would produce the drones in the hive that had destroyed their drones would not be permitted to mature in any event, as that colony had decided not to rear more drones at that time. But when such a comb is placed in a *queenless* colony, the bees will nurse and rear a drone from every drone egg and from no others. A colony having capped and unsealed drone brood will destroy all such brood from the egg to the capped brood when they have decided to rear no more drones.

Anyone desirous of testing the matter as presented by Mr. Morgan can do in this way: Insert a clean comb of all worker cells in the centre of a brood-nest of a full colony after the honey harvest is over. Let it remain there a week or longer, then place in a queenless colony and watch for results. Not a drone will be reared from those eggs, though the colony would do so from any eggs that would produce drones. his one experiment will thoroughly disprove the position of Mr. Morgan.

Correspondence.

John's Boy.

M. A. Kelley.

His name is John, but as that is his father's name also, the neighbors called him John's boy. He was a good boy, obedient, kind, obliging; he made friends of all. Truthful, honest, manly, all respected him. Handsome, frank, jovial, who could help loving him? Truly, John's boy was a young prince. Somewhat of a hero too was he. It was thus. His father kept bees. One day in June they swarmed. There were no "men folk" at home to hive them, but the boy was on hand; clad in his father's bee hat and veil he secured and hived the bees. Just then he heard a cry of pain from Lucy, his little playmate, a neighbor's child. A playful calf had overturned a hive of bees near where Lucy stood watching John hive the swarm. The little girl knew not what to do. Many angry bees were flying around, while some had already stung her. But the brave boy came at once to the rescue. To off with his hat and veil and put them on Lucy was but the work of an instant. Then with his own bright face, exposed to all the fury of the now enraged bees he caught up the girl in his arms and carried her in the house. He had quite a load and both hands being engaged he was at the mercy of bees. Stung? Yes, but what of that? He did not falter, but saved Lucy.

This was some years ago. John's boy is a man now, and has bees and a boy of his own. They call the bright-eyed prattler John, and his mother's name is Lucy.

Milton, W. Va.

Honey-dew honey.

Gonzales, Cal.

FRIEND ALLEY:

Mr. S. L. Watkins of Placerville, Cal., sends me a sample of a peculiar honey. It is from the honey dew that collects in great quantities during the fall months on the bodies of cedar trees. I send you a sample. From Mr. Watkins description, I gather that, after all bloom has passed away, this substance forms on the cedars of his section in such quantities that the bark fairly glistens; that it lasts till rain has washed it off, and that it is especially noticeable in the fall after a dry year.

It is an unfailing source at a time when bees would otherwise perish. Mr. Watkins' bees made 100 to 150 pounds per colony towards the close of the season, after having passed the summer in a starving condition like the bees in most other portions of California last year. The sample sent me is the thickest honey I have ever seen. I took a small drop on a stick and strung it out to a golden thread five or six feet long. It has a decidedly suggestive flavor much like that of the inner bark or bast fibre of trees of that family. And, as one tastes it, he can almost imagine that he is in some pine forest surrounded by whispering sounds and balsamy odors, and is chewing, as in childhood he was wont to do, the bark of some tree that had been for some time laid low. I send this by Mr. Watkins who will send you a sample with it.

A. NORTON.

Placerville, Cal.

MR. HENRY ALLEY.

DEAR SIR:

With this mail I forward you a sample of honey-dew as requested by Mr. A. Norton of Gonzales, Cal. This honey was gathered from the bark of the incense cedar. I sold several hundred pounds of this honey-dew honey and it has given entire satisfaction. The bees cap the cells with a snowy whiteness which gives it a very beautiful appearance. This honey cannot be extracted as it is too thick. My best colony stored 150 pounds.

S. L. WATKINS.

[The sample package came to hand in due time. We found the flavor of it very pleasant, and think it a superior quality of honey. Should say that it is most too thick, or heavy, for wintering bees. It would string out for several feet in a fine, golden thread, the same as molasses that had been cooked long enough to candy. Wish the sample had been a larger one.]

On the anxious seat.

Plain City, Ohio.

MR. ALLEY: I am getting anxious to hear how you rear your queens in full colonies while the queen is still in the hive and laying all the time. I think it can be done by putting a close-fitting division-board in the centre so as to let the bees go in either side from the entrance and keeping the queen on one side, can it not?

JOHN R. HILL.

Confining the queen to one comb in the hive is practically making the colony queenless. But the queen need not be confined in that way. Cage her the same as in the method for introducing. While the bees would care for the queen and feed her for weeks, they would consider that they had no queen, and at once build cells.

The method as proposed by Mr. Hill is no part of our new plan for rearing queens in a full colony that still has a laying queen. No division-board is used, nor is the queen troubled in any way. One comb in the brood-nest only is disturbed. Have patience, my friend, and you shall know as much about it as we do.

Light crop honey — Queen rearing, etc.

Strasburg, Va.

We have had a rather light crop of honey in this section and that not as fine quality as usual. Some colonies produced a fine quality while the honey from others was bitter. I cannot account for the difference.

So far as I observed the Italians did not gather any bitter honey. I think the blacks and hybrids were the fellows that brought in the bitter stuff. If you know why this is, I wish you would inform me. I also would be glad if you would let me into the new secret of queen-rearing, that is, if you propose to let your customers have the benefit of your experience. I rather enjoy your criticisms on queen-rearing in October API: I know you are right. I have tried the method you criticised enough to know it will not do.

G. W. EBERLY.

We are of opinion that bees in the matter of taste are like the human family. While some people find a bitter flavor very pleasant, others do not. The same may be said of things that are sweet. Well, some colonies of bees like the taste of bitter nectar, and will gather and store it in the hive, while other colonies will not touch such stuff.

The colonies that stored the bitter honey happened to strike that particular

flower in their first search for forage, and as it is the habit of the bee to gather from one source only as long as there is any nectar to be obtained, therefore before they visit another variety of flowers, the combs were filled with bitter honey.

The above statement of Mr. Eberly seems to confirm somewhat the remarks we made in the August issue "that bees store but one kind of honey in the same cell." A writer in the *British Bee Journal* seems to differ from us in this matter.

If Mr. Eberly had read the APICULTURIST with more care he would have known that we intend to give our subscribers the full benefit of our experience in queen-rearing. We do not propose to make public the method of rearing queens in full colonies without first removing the queen. The full details will be published in pamphlet form and presented *free* to each subscriber of the API. The work will be ready by March 1, 1889.

Introducing queens.

Newark, N. J., Oct. 2, 1888.

FRIEND ALLEY:

The queen you sent me came duly to hand, and was at once successfully introduced according to the process described in the API lately. It is one which I have successfully practised for three years. When queen in cage is received simply place it on the brood frames of the colony having previously been made queenless and leaving it so with food protected by a small piece of enamel cloth from bees in hive. The next day I open the hive and lift the cage, and if everything looks peaceable and bees feeding queen through wire cloth, I let them eat her out, which they generally do in about twelve hours. It is an easy and safe way to introduce queens.

In closing, allow me to express my thanks to you for kindness in replacing queen, she is certainly a handsome one, and a very energetic layer, beginning as she did the same day she was released by the bees, and we have had very wet and cold weather for the past two weeks.

CHAS. H. THEBFRATH.

The above method of introducing a queen is not the one given in the APICULTURIST and referred to by Mr. T. The method I gave is this: Unqueen the colony and at the same time insert the shipping cage. In the course of twelve hours the new queen will be released and successfully introduced.

The state of our honey market.

Unlike last year at this time, the demand for honey is very slow. In September and October, 1887, we could not supply our demand for comb honey. Parties were holding on, expecting a large advance in prices. An advance was established, although not as great as some of our sanguine brethren expected and I am not certain whether the majority of our friends were benefited or injured by their hold-on policy. Certain it is that a number of them held on too long and lost money. The demand ceased with the approach of Christmas to an extent never experienced before.

This hold-on policy of last season is the cause that our markets almost everywhere are overstocked now with old comb-honey, all of which would have sold at two to six cents per pound higher last fall than it does now. If sold last year, larger profits would have been realized and twelve months earlier. Besides, room would have been made for the new crop, however small that may be.

Crops of clover and basswood were very small and but little white comb-honey need be expected. But buckwheat and other fall honeys are abundant and we have been offered large lots. Although unsalable, almost, at other years, dark comb honey would find a market now in the absence of a better article, but we are slow to buy because there is so much old comb honey on hand yet of which we have our share, and which must be disposed of. The public is prejudiced to granulated comb honey and sales are unsatisfactory. Cannot be otherwise.

The advance of one-half cent per pound in extracted honey has checked somewhat the demand from manufacturers, which will be made up, however, as soon as they are convinced that the last season justifies no lower prices. Demand is slow at present.

There is no new white comb honey on the market. Last year's crop is offered at 12 to 15 cts. a pound in a jobbing way. Demand slow.

There is a slow demand for extracted honey which brings 5 to 8 cts. a pound on arrival.

Beeswax is in good demand and brings 20 to 22 cts. a pound for good to choice yellow.

CHAS. F. MUTH & SON.

Cincinnati, Sept. 18, 1888.

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THIRTY YEARS AMONG THE BEES.

By Henry Alley.

INTRODUCTION.

Had any one predicted thirty years ago that the rearing of queen bees could have been made a special and profitable business by any number of people, he would have been considered insane; perhaps so much so as the one who dares predict anything concerning the possibilities of future beekeeping. Nevertheless, there are at the present time more than a score of people who devote nearly all of their time to the production of queen bees.

Thirty years ago but few beekeepers understood the art of queen-rearing by *artificial* methods. No one had written a book upon this interesting branch of apiculture, nor could but few beekeepers be found who had had even the most limited experience in the art of rearing queens.

The fact that there never had been any demand for queen bees is the reason why queen-rearing was so little understood in days gone by. It may seem strange to the younger beekeepers for me to say that there has been no greater advancement made in queen-rearing than there has been in the methods for the production of honey, either comb or extracted: also in hives, and, in fact, in all branches of bee culture. If the same advancement continues for thirty years to come that has been made in the past thirty years, no one can predict what is possible in apiculture.

Queen-rearing is a subject in which all beekeepers are more or less interested. How to produce queens, first-class in all respects, by *artificial* means, is a question that has long attracted the attention of the prominent apiarists of the world.

Having made queen-rearing a special study and my sole business for more than a quarter of a century I hope to be able to throw some new light upon the subject as the result of my long experience in this particular branch of apiculture.

In order that we may be successful in the production of honey it is of vital importance that our queens are first-class in every respect. To rear queens by the "forced or artificial" methods, as it is called, requires many years of practical experience. It is true that one, even with limited experience with bees, can give a piece of comb containing brood or eggs to a queenless colony, and thus rear queens; but this is not queen-rearing by correct, practical, or by proper methods.

He who can rear queens to equal those produced under the swarming impulse has much to boast of.

Nearly thirty years ago the writer began to rear queen bees and ship them to beekeepers in all parts of the country. With each year of active and practical work in the bee-yard, I have gained a fund of knowledge and experience in beekeeping, and especially of queen-rearing, that but few people are likely to attain; certainly such as few people will ever achieve without first devoting years of labor and hard study to accomplish. Queen-rearing, and beekeeping generally, is a most fascinating pursuit, and when a person once engages in it he seldom gives it up wholly.

The reader must not suppose that the writer is an *old* man because he has had so many years experience in queen-rearing. Though well advanced in life, he hopes to be with you for many years to come. I began beekeeping at the age of twenty three years, and queen-rearing on a small scale was one of my first hobbies. I had kept bees but a few years when

the introduction of the Italian bee created so much excitement throughout the world. At that time a demand for Italian queen bees sprang up, and several parties beside myself commenced rearing them to supply the trade. Since that time—somewhat over twenty-nine years ago — I have given my whole time to this branch of beekeeping.

With the above brief introduction, I will try to explain the several methods for rearing queens that have been practised in the Bay State apiary since its establishment. Any of the methods given will be found practical, and may be relied upon by those who use them for producing queens that are equal to those reared in full colonies under the swarming impulse.

How to rear queens.

We will now suppose that the reader has had a proper amount of practical experience in the early branches of beekeeping to fit him for queen-rearing and is ready to take up this branch of beeculture and attempt to make it a success.

Those who intend to make the rearing of queens a business will find it necessary to commence early in the spring to prepare the colonies for cell building. Here let me say that unless one can have queens ready to ship as early as May 20, or certainly by June 1, he should not attempt queen-rearing as a means of livelihood.

In the north there is but one way to get colonies in the swarming condition as early in the season as is desirable, and that is by *liberal* feeding. This will, of course, stimulate the bees to brood-rearing. The proper time to begin feeding is when the bees commence to carry in pollen.

I have found that the best way to feed in the spring is to use a wire-cloth honey-board (described on another page) and have also discovered that powdered sugar — the same as confectioners use to frost cake —and honey mixed, say twenty-four ounces of honey to five pounds of sugar, is an excellent food for stimulative feeding. The mixture should be thoroughly kneaded and worked about the same as a good bread-maker prepares the sponge for a batch of bread. When the food is ready, raise the cushion and place it on the wirecloth directly over the cluster, and cover up warm. The bees will soon take all the food through the wire and place it in the combs. About one pound of such food should be used each week.[1]

I am partial to the double-walled hive for obtaining large colonies and rapid increase early in the spring.

Those colonies that have wintered in the best condition should be selected to rear the first queens.

When the bees begin to gather honey from natural sources, any further feeding will be unnecessary and should be discontinued. By May 5th to the 10th, the colonies fed should be strong and have the appearance of being ready to swarm. The winter packing should not be removed, however, until the sections are placed on the hive, and that should not be done until there is plenty of forage for the bees and the weather is quite warm. The entrance to the hive should be kept contracted to about two inches for the largest colonies. This will prevent the escape of heat from the brood-chamber. I like to keep the interior of the hive as warm as possible. If the combs of a colony that has been treated as above for several weeks are examined, they will be found full of brood in all stages. There should be more or less capped drone brood and perhaps some drones. This is just the condition in which a colony should be before it is used for cell building.

The selection of a queen mother.

Now we have reached a point where all is ready to commence queen-rear-

[1] If queens are not be reared until after the honey harvest has commenced, no such preparation as given above will be necessary, and the method for rearing queens in full colonies without removing, or caging the queen, will be found the most practical one to use after the 20th of May and up to the end of the honey harvest. This method will not be given here nor will it be made public. It is my intention to publish it in pamphlet form and present a copy to each purchaser of this book, and to each subscriber to the *American Apiculturist*.

ing and I will mention some of the qualities, and give some of the points that a queen should possess that is to be used as a queen mother. All experienced beekeepers know the importance of having a strong, vigorous mother-bee. It will be understood, of course, that the breeding queen should be carefully selected, and thoroughly tested the previous season, in order to determine her qualities regarding purity and other desirable points. In selecting a mother-bee, I make it a point to select the largest and finest formed, as well as the brightest colored queen in the apiary. Special regard is paid to selecting for gentleness, prolificness and good working qualities. Purity is determined by selecting only those queens whose worker progeny is uniformly marked. Such queens can be depended upon to duplicate themselves in handsome, golden colored royal progeny every time.

Never select a queen whose workers are poor honey gatherers, as queens from such mothers will not be first-class in any respect.

How to obtain the eggs for cell building.

I cannot rear queens on a large scale and draw the eggs from full colonies as most queen dealers do and advise others to do. There are many disadvantages and objections to such a practice. The life of a queen is endangered every time a hive is opened and any of the combs are removed. Even if the queen is not killed by being jammed between the combs, she is liable to be "balled" to death. When a hive is opened the bees, and more especially the queen, is more or less excited, and at such times the bees are apt to destroy their own queen.

Then, again, it is a difficult matter to find eggs in a full colony, in any desired quantity, and in the right condition for cell building at any time one desires to start cells. The plan recommended by most breeders of queens is to insert a clean, new comb in the centre of the brood-nest of a full colony, and in the course of a few days the comb is removed and after cutting more or less holes in it, it is placed in a queenless colony, when a number of cells will be built about the apertures thus made.

While such a plan may do for rearing a few queens, I think it very objectionable if one hundred or more queens are to be reared.

To obviate all danger of killing any valuable breeding queens, I find it the best plan to keep the mother-bee in a small hive, similar to the one illustrated in figure 1. The dimensions of such a hive as I have used for many years is as follows: Depth, six inches, width from side to side, eight inches, and from front to rear, six inches. This is inside measure. Five frames are used in the hive. These hives are made of $\frac{7}{8}$ in. thick boards for durability. When

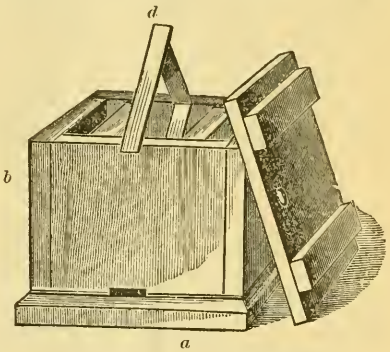

FIG. 1. *Hive for breeding queens.*

the colony is made up, two combs of honey, two of brood and one empty comb are used. The frames of honey are placed at the sides, then the brood, and lastly the empty comb is placed in the centre. About three pints of bees and a queen are then put in the hive. The queen will deposit her first eggs in the empty comb. Three days later those eggs will be at the proper age for cell building.

A comb that has been used for brood once or twice is rather the best to use for cell building, though most any comb will do when prepared as described further on.

About one week previous to the time of commencing queen-rearing is the

proper time to prepare a hive for the breeding queen, as she should be in the hive several days before any eggs are taken from the colony, and the bees allowed time to get the hive in order for the work of the season. After one or two combs have been filled and removed, the colony will be in condition to furnish one comb of eggs each day during the season. If the queen is what she should be, every cell in the frame will have an egg in it. I make it a rule to remove that comb every night, and insert another one in its place. After marking the date of the month on the top-bar it is then placed in a queenless colony specially prepared for the reception of such eggs. Here the eggs are nursed and cared for until they are wanted for cell building. It would not do to place such combs in a colony having a fertile queen, as she might find a few cells that had no eggs in them and at once deposit some. Under such circumstances there would be an uncertainty as to which queen the cells when built would belong.

Advantages of using such hives.

The advantages of using such small hives from which to obtain the eggs will be seen at a glance. Some of them are these. 1. It is not necessary to open a full hive when eggs are wanted. 2. The exact age of the eggs is positively known, and one may know when to prepare his bees for cell building and the exact time when the young queens will appear. This is one of the most important features of my method of rearing queens. Every movement connected with queen-rearing should be so systematized that no mistakes can occur. By my system of getting eggs for cell building and rearing queens, it is impossible for the bees to build cells from anything but eggs or very young larva. There is no guess-work or loop-holes left open for mistakes of any nature.

Preparing the bees for cell building.

At this point every preparation is complete for queen-rearing. The colonies have been forced up to the swarming-point and the eggs are at the right age from which to start cells. The next move is to select the colony for the work and remove the hive to the bee-room, where everything has been made convenient and comfortable for doing the work that must be done to fit a colony of bees for cell building.

Just at this point not only is there needed a convenient room in which to do the work, but several other articles should be at hand; among them a wire-screen, used for fastening the bees in the hive. A small broom, for brushing the bees from the combs, is one of the most convenient things in the apiary; also a box that will hold three pecks at least and having a top and bottom of wire cloth. For convenience, this box will be called the swarm-box. It is used merely to confine the bees, for a few hours, while they are being put in condition for cell building.[1]

When the bees have been removed from the combs they are placed in the swarm-box to remain from one to two hours or until they are in a proper condition to accept eggs from which to rear queens.

In the previous editions of the "Bee-keeper's Handy Book" I gave directions and advised keeping bees intended for cell building in a queenless state and confined in the swarm-box ten to twelve hours. Experience has shown that bees that have been in a queenless state but a few hours will destroy eggs prepared for them for rearing queens by my former method. Hence the necessity for keeping a colony queenless so long a time before eggs are given them; but, after practising this method for several years, it occurred to me that it would be an easy matter to obviate the necessity of the long confinement of the bees in such small quarters and so long a time as ten hours, and I was prompted to test the following experiments.

[1] All the articles used in my methods and in the Bay State apiary, will be described farther on. Also a room in which to handle bees, as I think one should be arranged.

To be continued.

By the Manager.

The season and how it turned out.

I must acknowledge that I have been beaten, and badly too, by the weather since August 25. Such unusual, cold, rainy, cloudy weather never was before known. Of course it was not. Everybody says so and what everybody says must be true. First it rained and then it rained again and kept on raining, then it tried to clear up, but it only got ready to rain again, and continued to rain until one night a killing frost struck all of New England, and that little spell of winter seemed to bring about just the right condition for more rain and so down it came in torrents, another freeze and then another deluge; in fact, I do not think it will stop raining this fall. It has rained for two days past, and now, October 17, it is trying to clear up, and the harder old Sol tries to stick his nose through the clouds, the more it seems to look like rain again. Well, let it rain, who cares? The golden-rod and all other fall flowers are gone; queen-rearing and queen-shipping for the season has passed by. So let it rain.

Well, let me tell you it rained from August 25 to October 17 with every indication of a continuation for an indefinite period.

I really believe some good to beekeepers will be the result of so much moisture. The white clover, which must get well rooted one season before it can bloom, is in splendid condition and in great abundance. The outlook for a crop of honey in the season of 1889 is unusually good in nearly all the northern states.

Late in August all my hives were solid full of bees and ready for the fall harvest, but the harvest came not. The fields and roadsides were covered with golden rod and other fall flowers, yet it all went and not a bee realized the amount of hard work he had lost on account of the unfavorable weather. Well, this beautiful spell of weather cost me the loss of two hundred and fifty queens. I also had to pay $60 for sugar to feed my colonies for winter. The queens had but two favorable days after August 25 for a flight, and not a bee, except on those two days, dared to poke its nose out of the hive to get a sniff of the fall bloom.

A correction.

The article on "foul brood" on page 187 credited to James A. Clark should be credited to James A. Green of Dayton, Ohio.

W. Z. Hutchinson, editor of "The Bee-keepers' Review," is on the sick list again. I do not wonder at it, as most of those who have started bee-papers have been pretty sick the first few years. There is no doubt in my mind that Bro. H. will be a good deal sicker before he gets rich at publishing a bee-journal, notwithstanding the fact that Bro. H. is editor, compositor, printer's devil and all.

Will each one of the subscribers and readers of the Apiculturist take the trouble to inform his beekeeping neighbor that he can get the Api from October 1, 1888, to January 1, 1890, for seventy-five cents? Please do so and I will tell you all what effect it has upon our subscription list. Do not forget to do it, will you?

Our experience at a fair.

The Bay State Agricultural Society of Massachusetts held a fair at Springfield, Mass., from October 4 to October 11, inclusive. The premiums offered for best exhibit of bees, etc., were as follows:

Italian bees in observatory hive,	$5
Frame of queen cells, . .	5
Comb honey, ...	5
Extracted honey, . . .	5
Beeswax, ...	5
Best movable-comb hive with implements of the apiary, .	5

As to bees regard to be had to quality of queens and bees; as to honey the quality and style of package to be considered.

The manager of the Apiculturist had a special invitation to make a display at the fair, which was accepted, and everything the list called for except fall honey was exhibited.

The premium on queen cells, on beeswax and best hive and display of apiarian implements were given us, but three other five dollar premiums should have been awarded us as will be seen below. We exhibited two observatory hives of bees and as there were no others of the kind there, we could see no good reason why the ten dollars should have been given to the person to whom it was awarded. Mr. Samuel Cushman of Pawtucket, R. I., was the judge. Al-

though Mr. C. has had some experience with bees he did not seem to understand what was meant by an *observatory* hive, and so we lost ten dollars; the premium being given to a man who exhibited bees in glass-hives in which nothing but a few bees and old, black, dry combs could be seen. The combs next the glass were very dark and did not contain one cell of honey, and not the least skill was exhibited in the matter at all. No one who values his reputation as a skilful beekeeper would ever make such a sorry-looking display as a sample of his beekeeping qualities.

I need not say that I think those fellows do not read any bee-paper. Now, I contend that such a display of bees and honey is a disgrace to the beekeeping fraternity and never should have been rewarded with anything but good advice to "go home and try to do better next time." I also contend that it requires considerable experience and skill to arrange an observatory hive that will be a worthy one and a credit to the exhibitor. In the above case it was the opinion of the judge that it was *inexperience* and *unskilfulness* that were entitled to be rewarded.

Here is another point to which I want to call the attention of those who intend to exhibit apiarian products at fairs. You will notice that five dollars was offered for the best extracted honey "with *quality* and *style of package* to be considered." Thinking I would be the only one up with the times if I only had some of Mr. Charles F. Muth & Son's half-pound bottles in which to exhibit my extracted, I sent to Cincinnati, and soon received some nice ones and filled them with as fine, white clover honey as was ever stored in combs. All who spoke of it said it was the best display in that line, and many old *experts* saw it, too. Yet the first prize was awarded to a lot of honey in *pint* fruit jars. The judge remarked that the only difference between that and mine was that the honey in pint jars was a "little thicker" than mine. Notwithstanding that fact, the second prize was awarded a lot of *dark* honey in *quart* Mason fruit jars. How was that for judgment?

Well, friends, I will now tell you how to manage things in order to get all the big prizes at a fair. It is this — take your worst looking hive of bees, and put your extracted honey in large, homely fruit jars, and you will come off first best. I did, as you see. This is the way that premiums are awarded at fairs in the east.

The weather for September.

The following extract, taken from the weather report of the New England Meteorological Society, will give some idea of the kind of weather New Englanders have had to endure since the last of August. We have had an unusual number of heavy storms and a low temperature has prevailed all the time.

The month of September was in New England a very remarkable one, so far as its weather conditions were concerned. It has been many, many years since there was a September that could be at all compared with it. The rainfall was tremendous, showing very great departures from the averages established at stations where observations had been taken for upward of one hundred years, and in one case an even longer period.

Book Notices.

A copy of the 15th edition of "Cook's Manual" has been received. I need not say one word in its praise, as the work commends itself. Such a book should be in the hands of all beekeepers. It is worth a hundred times its cost to anyone who keep bees.

"THE HONEY BEE" is the title of a 26-page price-list sent out by Rev. E. T. Abbott, of St. Joseph, Mo. A good deal of practical information may be obtained from its perusal.

"REPRODUCTION OF THE HONEY BEE" is the subject of a lecture by Prof. G. G. Groff, of Lewisburg, Pa. It is an able production and very interesting. An extract of it may be found in this issue.

THE AMERICAN APICULTURIST

A JOURNAL FOR THE NOVICE AND EXPERT.

Devoted to Best Races of Bees, Best Hives, Best Implements and Best Methods of Management to make Beekeeping a Success.

PUBLISHED MONTHLY. HENRY ALLEY, *Manager.*

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Correspondence.

A new Management of Bees, Brood-Chambers, Brood Frames, etc.

DR. G. L. TINKER.

I have held for some years that we have not yet got the most efficient and economical brood-chamber. In deciding this question, consideration must be had for the most successful system of management. Evidently we have not yet solved the problem of how to obtain the largest product from our bees. And here let me say, that the invention of the wood and zinc queen-excluding honey-board marks an era in the progress of apiculture, and creates possibilities heretofore unknown. With a brood-chamber of the right size and construction, it gives a control over the working of bees that is impossible by other means. It enables us to keep the entire force of every colony together at all times, and that too in a most feasible and practical manner, while most colonies may be kept under the strong impulse that characterizes the young swarm. My new system of management secures these results and the opinion is ventured that we shall look in vain for a system of greater possibilities either for comb or extracted honey.

I am now ready to contend that a brood-chamber for brood solely, is one of the first essentials of success. Heretofore, we have had a brood and store-chamber combined. This may be all well enough for a haphazard system of beekeeping where want of care or negligence would often result in starvation of the bees were this storage room in brood-chamber not provided. But the modern intelligent beekeeper who is aiming at practical results and keeps bees for the money that is in them must have an economical brood-chamber. By this I mean that there should be no room in a brood-chamber for honey that should go into the supers. This will mean one that will contain about eight hundred square inches of comb not less. The one that I am now using contains eight hundred and thirty square inches of comb and seems to be about right; it is certainly large enough for the new system of management which requires for the best results in producing comb honey some contraction, or, more properly, a brood-chamber for brood. I am opposed to too great contraction. It may do in a short honey flow, but as a rule is not a success. Too great limitation of the queen results in excessive swarming, and the carrying of pollen into the supers. However, much is dependent upon the construction of the queen-excluding honey-board in the matter of swarming, providing there is ample room for the bees above it. I have held all along that one-rowed zinc in honey-boards used alternately with the brood frames, fails to afford free ventilation of the supers (which is so essential to the rapid ripening of the honey) and hinders the working of the bees. But two-rowed zinc used in the same manner fully overcomes every objection that can be urged against the use of excluders in honey-boards, and no matter how large the colony, they neither obstruct the work nor limit the product in any way. The result is, that by the use of such a honey-board we may limit the brood space to the actual requirements of the brood and if we provide ample room in the supers we shall not be troubled by excessive swarming on this account. After much experiment I am fully satisfied that a brood-chamber of the size above stated is as small as can be profitably used. As we have no occasion to contract it we never have any use for division-boards or dummies. But as it is made to storify, a very large hive can be quickly made at any time to suit the purpose of the beekeeper.

That this brood-chamber is large enough for brood alone will appear from the following:–

Fifty worker bees can be reared every twenty-one days in each square inch of comb. It is therefore possible to rear in 830

square inches of brood comb 40,000 workers every twenty-one days requiring that the queen should lay an average of nearly 2000 eggs a day. It is said that a good queen may lay 3000 eggs a day, but we know perfectly well that if they can lay that many in a day, they do not keep it up for many days at a time. Such being the case, there will often be times that queens may lay 3000 eggs a day for several days, even in 830 square inches of comb. Thus it will be seen that if all the surplus honey is placed within easy reach of the bees (and they naturally place it above the brood) it is practical to have a brood-chamber for brood alone. Again, I have had some of the largest swarms that I have ever seen issue from these small brood-chambers that had only section supers over them. Nor is there any trouble to get these large swarms early if the brood-chambers are protected by proper protecting in early spring.

The new management

of bees, after all colonies are built up strong, begins with the swarming. The principle involved is one well-known and generally acknowledged, and is as follows: It is the instinct of bees to swarm and multiply in numbers of colonies. It has not so far been, and probably never will be, prevented when the conditions for it are favorable. As a rule the colonies that divide up their working forces by swarming do not make as much surplus as those that do not swarm. It follows that a system of management that will prevent division without checking the working order must give the largest returns. This result we secure by taking the brood from every colony that swarms and placing it over the queen-excluding honey-board of another colony able to care for the brood that has not swarmed. The swarm of course is hived on the old stand and the supers transferred from the old to the new hive. The new brood chamber may have frames partly filled with foundation or empty combs left over from the previous season's use. The bees remaining on the combs in the old brood-chamber are shaken off the combs and allowed to go in with the swarm. The brood is then taken away as above stated, and the supers of the colony to which it is given are placed upon it. All colonies that swarm are treated the same. Thus, all bees of every colony will be kept together so that the

Prevention of increase

is effectual, and yet the bees are allowed to swarm as much as they desire. The placing of brood with queen cells upon another colony does not cause it to swarm, because the old queen below is not aware of the cells above; but if the cells are not wanted they may be cut off when shaking off the bees. If the honey-board is not placed between the brood-chambers and the cells are not cut out a swarm will issue very soon.

This management gives an increase of brood-combs up to a certain point, after which all swarms would be hived on empty combs, when the product might be nearly all comb honey in sections or all extracted as desired. There will be always enough honey secured in brood-combs to winter every colony, so that the feeding of sugar will be rarely required.

The surplus combs or combs of honey are piled up in the brood-chambers on a few colonies to protect them from the moth. In October, the combs not required for winter use are piled up in brood-chambers and left out-of-doors all winter, the only protection required being against mice. The cold of winter will destroy all moth larvæ and eggs in the combs till they can be used again.

I shall claim the credit of introducing this new system of management to bee-keepers which is made eminently practicable through the use of my improved wood-and-zinc queen-excluding honey-board.

I am aware that it is not a new thing to place combs of brood in the supers of colonies, but I shall claim that no one up to the present time has reduced to a system, and made a practical success, the new system of management here made public and presented at the late meeting of the International Bee Society at Columbus, O., for the first time.

The queens may be clipped or not as is desired. I do not clip my queens but if I lived in the country near timber I certainly should. Here I have the New Philadelphia water works with 100 lbs. pressure in the hose to shower down any swarm disposed to go off.

A storifying hive operated on the plan here given has advantages that no other has. My experience with them two years ago led me to predict in an essay read at the Columbus Convention last winter, that a storifying hive would be the hive of the future; and after the experience of the past season I am more than ever satisfied that this new management will be revolutionary in our methods.

The size of the brood-frames used is seven inches deep by seventeen inches long and it is a simple hanging Langstroth frame in a very plain and cheaply made brood case. Eight frames are used in

each and the supers hold twenty-four sections 4¼ x 1¼ x 1⅞ with wood separators.

My improved honey-board has never yet been passed by a queen either laying or virgin so that virgin queens that may hatch in brood combs above laying queens cannot pass down to destroy the laying queen as they are sure to do if they have the chance, for no queen cell in comb placed above the honey-board are ever destroyed by the bees of other colonies to which they may be given. This is a remarkable fact and is now made public for the first time. Thus all depends upon the perfect working of the honey-board and I may be pardoned, I trust, if I state that the perforated zinc I use is the only perfect and reliable zinc for the purposes here described that has yet been made.

The management of queen cells and virgin queens and drones, by the new management I will reserve for another article. We have a new field of discovery opened up here, and while I have discovered much, there is yet remaining much to be learned.

Brace-combs.

For years I have sought a remedy for the many brace-combs that bees often build between the brood-frames and honey-boards and supers. It is at last found in the new system of management, and the use of the brood-chamber described. In all cases of large swarms and where brood is placed over other colonies there are no brace-combs built anywhere, so that all parts of the hive are easily separable.

New Philadelphia, Ohio.

The above is a step in apicultural advancement of practical worth, and should be practised by all who wish to make the production of honey a success.

One point strikes us most favorably, and that is the size of the brood-nest mentioned by Dr. Tinker. The same thing has been used in the Bay State apiary the past two years, and we have adopted it as the standard brood-chamber for our apiary. All the hives we have made and shipped the last two years have the same improved brood-chambers.

Our readers will remember that we stated in the August issue that "we had a better system for getting comb honey than is practised by the method of contraction," and we had reference to this brood-chamber. Like Dr. Tinker, I believe in making the brood-nest the proper size and then letting it alone.

The doctor speaks of a method of preventing the building of bridge-combs. That trouble is entirely obviated by the way our brood-frames are constructed.

The only difference between Dr. Tinker's system and that practised in the Bay State apiary is, that the doctor finds it necessary to use a queen-excluding honey-board and we do not, and no queens have ever entered a section placed on the Bay State hive, and no honey-board of any kind is used.

Contribution to the Physiology of the Honey-bee.

L. STACHELHAUSEN.

CONTRARY to the theory given in a previous article it may seem that many colonies winter well and breed in early spring without any pollen. If the bees need pollen at this time, they must certainly have some substitute.

Nobody can believe that the bees can prepare an albuminous food for the larvæ from the albumen contained in their body or blood, at least for weeks and months.

The renewal of the body of the bee is a very rapid one, or the food is digested very quickly, so that a worker bee without honey or other food will starve in thirty-six hours. If the bees prepare the jelly for the larvæ, the consumption of honey and pollen is very great, so it is impossible that the body of a bee can spare so much albumen as is necessary to feed the larvæ for weeks or months. This the more, as the food for the larvæ is not a secretion from the blood, but a product of the stomach.

Schoenfeld experimented to find out this substitute.

The outer shell of a pollen grain (exine or cuticula) is very resistive. The stomach of the bee has a great digestive power, but cannot digest every pollen grain. The stomach of the larva has this power in a less degree, and we see by the microscope, that many pollen grains are in the excretæ of the larva on the bottom of the cell, when the young bee has emerged.

Schoenfeld has observed that in old, dark brood-combs the cappings of the brood and honey, the walls of the cell and the bottom of the wax are mixed more or less with pollen grains and their shells (cuticula). Every comb once used for brood shows a great number of pollen-grains and remainders of them; so every comb, on which the bees had used old wax partially, contains pollen. The older the comb, the more pollen it will contain. Black combs do not contain 50 per cent. wax, coffee-brown combs 57.6 per cent.

More than this, the freshly built combs are not pure wax every time; they do not contain shells and remainders of pollen, but whole pollen grains; and the freshly secreted wax scales contain some pollen, too.

Schoenfeld carefully took the wax scales from comb building bees. Fifteen wax scales were examined: only four were pure wax, the others contained from four to thirty pollen grains.

These pollen grains and shells are mixed with wax in different ways. Many grains adhere to the wax as dust; and, later, get worked into the wax by the bees, so we see every part of a freshly built comb full of pollen. The cuticula in the combs is the product of digestion of the larva.

The larva does not empty itself before the cocoon is spun, because its stomach is closed by an inner skin. But after this time the larva empties the alimentary canal with this inner skin of the stomach and these excretæ lie on the bottom of the cell. The bees clean this out, but some will adhere to the wax and thereof the cuticula and remainder of pollen in the combs.

It is well known in Germany, that afterswarms with new combs go through the winter in a worse condition than colonies on old combs. Further, we know that in early spring for want of pollen, the bees many times gather some substitutes. So Schoenfeld was of the opinion that the pollen contained in old combs is sometimes used by the bees and proved this by the following experiment:

He formed two nuclei, which had no food for two days in order to do away with all surplus store in the honey or true stomach. In thirty hours colony *A* received a freshly built comb with one to three days old larvæ and two freshly built combs with sugar syrup, without any pollen. Colony *B* received two old black combs and sugar syrup and a freshly built comb with brood without any pollen. The colonies were located in a dry, dark cellar.

In the chyle stomach of bees out of colony *A* he found after four days no pollen; but bees of colony *B* had pollen grains and shells and many small black shreds, which could be parts of the black combs only. But the experiment did not give any better result, because the two colonies had destroyed the brood in less than four days.

So he experimented in another way. A black and a freshly built comb, each containing one to three days old brood, were surrounded by the double wire screen mentioned before, and introduced into the brood-nest of a strong colony. Before this plenty of bees from colony *A* were introduced which had had no pollen for seven days. After four days the examination of the brood showed, that the larvæ in the black combs had pollen grains, shells and the above mentioned black shreds in the alimentary canal, while the brood of the white comb contained pure chyle. This seems to indicate that the bees can use the nitrogenous parts of old combs.

The reader will remember the experience of J. M. Doolittle in winter 1884–5 with one colony dying of diarrhœa wintered on sugar stores and without pollen. Professor Cook stated at this time that some nitrogenous food must necessarily have been in the reach of the bees, while Doolittle asserted that the colony did not gather any pollen. Now we see, both were right; the bees used very probably the nitrogen contained in the comb. The matter is not settled yet and Schoenfeld is willing to experiment further. But we know, that pollen or some other albuminous food is necessary for bees to rear brood. In early winter, they may use no pollen at all, but as soon as brood-rearing commences, they need nitrogen.

According to Heddon's pollen theory, we shall winter without pollen. If the bees will use the substitute in the combs, the whole trouble is useless and Doolittle's experience seems to indicate this. More than this, as soon as brood-rearing commences and the bees can't get enough pollen inside of the hive, they will get uneasy and this always causes danger of dysentery. Admitting that dysentery is caused by eating pollen in confinement, only one remedy is possible and this is to keep the bees from breeding as long as possible. On the other side, the bees need pollen to preserve their own vitality and if it is not in their reach, they will suffer and in the spring we have many dead bees. Very probably the so-called spring dwindling has much to do with want of pollen. I do not know this, because I never had any trouble with spring dwindling; but many experiments of Berlepsch proved that worker bees forced to breed or to build combs without pollen or other nitrogenous food, suffer badly and will die in a short time.

I remark further of the pollen theory, that quite the same was published in Germany about 1778, but was soon abandoned.

The old beekeepers in Hanover selected all the time colonies with as much pollen as possible, and they understand how to winter their bees in straw hives every year with very few losses. Now it is recommended by Schoenfeld too, to look at a sufficient amount of pollen and if no pollen is stored and white combs only in the hive, to give some old combs as pollen substitute; this is quite contrary to Heddon's pollen theory.

Water for bees.

Another question in wintering bees is, do the bees need water in winter or not? The readers know that, besides others, Prof. A. J. Cook experimented with watering bees in winter. The bees took the water but wintered worse than the unwatered colonies. This seems to be

against watering. But this question was not settled thereby. If the bees take the water they seem to need it. If other unwatered colonies winter well, the question may arise, what other source of water may bees have?

In Germany are many beekeepers, who feed to the bees inside of the hive water by the gallon in winter, spring and summer and some affirm that watering bees in winter is absolutely necessary for good and sure wintering results.

Prof. A. J. Cook in his Manual of the Apiary, fifth edition, page 98, says:

Mr. Quinby, Doolittle and others say water is also an element of this food (for the larvæ). But bees often breed very rapidly when they do not leave the hive at all, and so water, other than that contained in the honey eaten, can not be added. The time when bees seem to need water and so repair to the rill and the pond, is during the heat of summer, when they are most busy. May this not be quaffed to slake their own thirst?"

When I read this about seven years ago it seemed very strange to me. I learned in Germany, that, for breeding, the bees need *much* water, the most in spring. So it is surely interesting to look the matter over again.

Regarding the point that bees carry the most water in hot summer time, Professor Cook is surely mistaken. I water my bees by a trough, because my apiary is so situated that the bees had very far to fly to any other water source.

In our climate some bees will carry water all the time: and if the weather allows they take water in winter, spring, summer and fall, but in spring as soon as breeding commences and no nectar is to be found in blossoms, a larger number of bees visit the trough. I have to fill my trough as often as twice and three times a day. This is about twenty gallons for 100 to 130 colonies. As soon as the honey flow commences, less bees appear on the trough. In our dry summers, when every blossom is dried out, the bees nearly stop flying, breed very little and act in general quite similar as in winter; then very few bees will drink water. More than this, carrying water is exactly proportional to breeding.

The question is now for what purpose the bees use this amount of water?

Some beekeepers in Germany (besides others, Dzierzon) affirm that the bees need water in winter to dissolve the candied honey. Schoenfeld is not against this opinion.

I believe that for this purpose water is never used. In dissolving candied honey, I think the bees take the same way as we beekeepers do: they will warm the honey and get it liquid. In the centre of the cluster the temperature is always sufficiently high to liquefy the candied honey; of course, in a longer time than we need by higher temperature. If you will pour a little water on candied honey of a moderate temperature (say 50° F.), it will take a very long time to get the honey liquid, if ever. If you will warm it, it will get liquid as soon with water as without. So I cannot see any use for water in winter for this purpose.

It is somewhat different if pollen in the cells is hard and dry. The bees will moisten this pollen by water to make use of it.

Some beekeepers say the bees need water to prepare the food for the larvæ. This food freshly placed in the cells is very much thinner or more watery than honey; but this is no proof that water is added. This jelly is prepared in the stomach of the bees and is quite different from the food taken by the breeding bees. So it may seem possible that in the stomach some sugar is changed to acid (in fact, this jelly is sour) or otherwise the sugar may disappear.

On the other side, the consumption of water is surely in connection with brood-rearing in some way. If we water a colony and then remove the queen, the bees will take water as long as uncapped brood is in the hive; as soon as the last larva is capped no more water will be taken by the bees.

In one of these articles I have said, that bees need water to eat pollen. The pollen in the honey stomach floats in a fluid of honey and water. Here necessarily water is added and sometimes sweetened water only may be used besides the pollen. You know how the stomach-mouth on the bottom of the honey stomach catches the pollen out of this fluid. If honey alone were used, the pollen would float on the surface of the honey and the stomach-mouth could not catch any pollen.

We shall see in a later article that the bees need pollen to prepare the food for the larvæ and a great amount of pollen too, and this explains the connection of the consumption of water with breeding.

More than this, to prepare the food for the young larvæ a quite fixed amount of pollen and honey is required. Without pollen the bees can do it a short time only for few larvæ. The bees could not get this fixed mixture, if the pollen would float in pure honey; they always would get too much honey. The construction of the stomach-mouth will explain this.

So it seems necessary to water the bees in early spring, when they cannot carry

water from outside of the hive. But many colonies winter well without water. Every beekeeper knows, that in cold weather the walls of the hive become wet. I do not need to explain this. The difference of the temperature between the cluster and the walls of the hive is nearly always sufficient to moisten these walls and the bees will take this water; but it may be to some advantage to give the necessary water more handy to the bees.

In regard to the consumption of pollen and water the bees will winter the better, the longer we can keep them from breeding. Before breeding commences neither pollen nor water is consumed by the bees.

Selma, Texas.

The Income.

M. A. KELLEY.

BEEKEEPERS, as a rule, look for an income from three sources: the money, the pleasure and the experience. The money we sometimes get, the pleasure often, and the experience always. The money is good when we get it, the pleasure is sweet while it lasts, and the experience is useful if remembered. Beekeeping, like winter weather, is not all sunshine. The sky is more clouded than clear. But how sweet, by contrast, is the sunlight when it comes! Beekeeping has in it the chief elements of success, pleasure and profit.

Many money makers grab for gold alone, but we, if true to our trade, get pleasure as well as profit, good as well as gain. And this is well, for were it otherwise, were there no pleasure in it, few would venture into a business which, at best, is rather insecure. The pleasure alone induces many to remain in the ranks even without hope of gain. And they have their reward, for when honey and money do come they are sweeter and better for having been unexpected.

But let not experience be forgotten, for it teaches many useful lessons. It teaches us to observe closely, to handle carefully and to love our little neighbors who have wings and stings. It leads us to be careful of little things, a great variety of little things, which taken as a whole amount to no little thing. It brings us face to face with the oft-forgotten fact that worth and wealth are won by work. It admonishes us to do well our part, to learn to labor and to wait. So let all get the most they can, in money, in pleasure, in experience; in money that they may live, in pleasure that they may be happy, and in experience that they may be wise.

Milton, W. Va.
Oct. 29, 1888.

Experience at a Fair.

MRS. H. HILLS.

WITHOUT doubt, many readers of the API have laughed over the story of the lady, who, having arrived at the station just in time to see her train moving slowly off in the distance, very politely thanked the stranger who, belated like herself, was standing on the platform, giving vent in a most emphatic and impressive manner, to emotions which, though equally stirring her own soul, she felt her powers of speech to be entirely inadequate to express.

I wonder if the able manager of the API, when penning the article in Nov. number, "Our experience at the Fair," anticipated the fact that some wicked subscriber would heartily rejoice at his discomfiture. But misery loves company, and how could I help rejoicing to see my own sorely disturbed "feelins" so faithfully and vividly portrayed.

And again: how shall I, a mere novice in beekeeping and honey production, ever dare to utter another word of complaint, on my own part, when the results of all the years of earnest, whole-souled, thorough work, which have been devoted by Mr. Alley to his chosen pursuit, are thus ignored and slighted?

The person who performs earnest, thorough work, whether physical or mental, and in whatever department of labor; whose primary aim is, not money nor yet false show and effect, but who, loving the work for the work's sake, gives all his powers to the task in hand; he is the true missionary in this benighted age of cheap, half-hearted work.

But is there no reward then, so far as outward recognition goes, for him who devotes all his energies, even to the very utmost that he may, somehow be enabled to accomplish the desire of his heart—good work? Alas! I fear not. It has been said that well-doing is the only reward of well-dying. At one period of life, this looks a blind saying, and too hard a sentence to be borne patiently. But there comes a

time, even in this present state of existence, when well-doing becomes its own "exceeding great reward."

But, dear me! I never started to write a sermon, but to tell my "experience at the fair." Well, to make a long story short, I also procured the Muth glass honey jars, in three sizes, and also the Newman glass pails in three sizes, but it was all of no use; I was served worse than Mr. Alley, inasmuch as there was no question, as to the superior quality of my honey, either comb or extracted. The sole difficulty was, it was not in as marketable shape as that in the "Mason fruit jars," etc. I would like much to call Dr. Tinker's attention to the marketable shape of my comb honey, to those beautiful white poplar shipping-crates, manufactured by him expressly for my market, to the lovely, four-piece white poplar sections. My comb-honey was in single-tier crates, in three sizes; also in Mr. Root's one-pound pasteboard cartoons; and all honey, both comb and extracted, labelled in the neatest possible manner. The same fate befell Mr. Dadant's extra thin foundation, which I exhibited, and so on right through. I will explain one point. I think I was a little wiser than Mr. Alley, in that I should never have thought of making an exhibit, had I not been most earnestly solicited to do so by the superintendent of the department for woman's work (Wisconsin State Fair) who wrote me that this class (apiarian) had been added to that department for the express purpose of interesting me. Knowing that no other woman in the state could make an exhibit like mine, I was led, blindfold into an egregious piece of folly, which fact renders the result still more insufferably provoking. For I well knew, that in the words of my friend, lawyer——, I might as well expect to get justice in "going to law," as at a fair. Well, Mr.——had two exhibits exactly alike: himself in charge of one, his wife of the other; same article entered for premium in two classes. I was unable to be present myself; but prominent beekeepers who were there assure me that I had more and nicer goods, and in better marketable shape, than had all the other apiarists, in both departments put together.

Sheboygan Falls, Wisconsin.

I believe in selecting competent men to act as judges at fairs, and such are sometimes found, and certainly would be found at all times were it not for favoritism that interferes. The person who does not know the difference between a full colony of bees and one in an observatory hive of but one comb, or one who considers honey in large jars in better marketable shape than when put in the small bottles as sold by C. Muth & Son, is not a fit person to serve in the capacity of a judge.

Public Prejudice against Extracted Honey. How shall we overcome it?

J. M. HAMBAUGH.

THIS is a subject of no little importance to the honey producer, and should be earnestly studied and discussed, and we believe that, should we successfully solve this problem, we shall achieve one of the most important factors in successful apiculture. Since embarking extensively in the business, we have become better acquainted with public sentiment, and have found numerous instances wherein extracted honey was looked upon with so much disrepute that to ask the parties to purchase would amount to almost an insult.

In fact it seems that a feeling of disfavor permeates the mind in some localities which to the producer amounts to the barring of the doors against his trade.

This state of affairs to us seems a mystery, and causes us to wonder whence the cause, and judging from what I have seen and heard I have formed my conclusions, which are simply this, that consumers have been most grossly outraged with adulterated or bogus honey, or else there is a conspiracy to break down the honey traffic, and probably both.

When I first embarked in the bee business, I worked mostly for comb honey, and took all manner of pains in putting up my honey in neat one and two pound packages, assorting and crating the nicest and most salable in crates glassed at the ends, etc., which I found entailed an almost endless amount of puttering work, at the end of which more or less dissatisfaction was engendered from jammed or leaky sections which led me to abandon the comb honey trade, on a large scale, and to run my stocks to extracting, reasoning that I could afford to take one-half the price for my extracted honey and make more out of my bees. My product being near or quite as much again, expenses, time and labor, curtailed about one-half, etc., which is near a correct estimate. But now comes the rub. While I have a splendid trade in the vicinity where I am acquainted, and the adulteration cry affects me but little, my crop has exceeded my demand, and I have been playing the part of the drummer.

With samples in my pocket, I have been hunting sales, with results as before stated. In nearly every instance when producing my samples to the grocery men the answer is, "little or no call for *strained* honey. Have you any comb honey?" and

it seems as though there is a prejudice against extracted honey that meets the united effort of every honey producer to overcome. We should first seek the course from which it emanates, and then apply the remedy. I would like to hear from others and what their experience has been in this direction.

I do not consider it safe for us to hunt sales through commission houses, neither do I consider the wholesaling of our honey to the grocery stores a safe transaction; that is, to meet the consumer in its original purity, and thus increase a demand for honey.

It is evident that there is a great deal of suspicion in regard to extracted honey and we can hardly believe the "Wiley lie" responsible for it all.

Spring, Ill., Nov. 8, 1888.

Bee Cellars and various Topics.

Z. T. Hawk.

In the December Apiculturist of 1887 I briefly described my cheap bee-cellar and my plan of preparing colonies for wintering. I had successfully carried twenty colonies through the previous winter in the cave there described, and I had little doubt that with the conditions much more favorable in the autumn of '87 I should be able to again winter my stock with little or no loss. The bees were put in the repository, November 18. The hives were not very full of bees nor did they have as much honey as is usually considered necessary for successful wintering. They were placed on the summer stands April 8, having been confined one hundred forty-one days. The temperature of the repository ranged from 38° to 44° above zero during the coldest weather, but during the latter part of February it fell to 36°. During the winter one queenless colony deserted its hive and crawled in with its nearest neighbor. That was my only loss, hardly a loss at all for I still had the bees and combs. Some of the colonies were slightly affected with the dysentery when taken out, but two or three days of pleasant weather made them all right. Friend Alley, it doesn't take a hundred dollar cellar to winter bees in; and if you know some poor fellow who is going to run the heavy out-door risk, because he cannot afford to make a cellar, send him the Dec. 1887 Apiculturist and charge it to me. If he have time, strength and a little vim, he can protect his bees with a cash outlay of a dollar and a half, perhaps less. If he have chaff-hives or double-walled hives that admit of packing he may get along very well by leaving his bees out; but I sleep better when mine are safely stowed away beyond the reach of blizzards.

Queen-rearing.

I tried my hand at queen-rearing during my vacation this summer, but I cannot say that I covered myself with glory or made the least addition to my fame as beekeeper. The "pesky" things behaved in a manner most surprising to me, and I think that fully half of all the young queens hatched in my apiary managed to lose themselves on their mating flights or to be killed at the entrances of their hives on their return. I think the chief difficulty arose from the scarcity of honey during the greater part of the time I was experimenting. The bees, having nothing to do in the fields, took to playing pranks on each other and the young queens were the chief sufferers. But there was one thing entirely outside all my previous experience with bees. A young queen left the hive where she was reared and mated and where she had been laying three weeks, to cast her fortune with another colony ten feet away that had a laying queen. I found her balled but too late to save her. Was it your Boston neighbor, Mrs. Partington, who said that "bees never do anything invariably?" I think they don't.

Two kinds of honey in a cell.

I am quite sure the Apiculturist is in error in saying that bees never place but one kind of honey in a cell. During the basswood flow this year I got two hundred finished sections and three or four hundred more almost completed. A great part of the latter were almost ready to be capped, but for a month the bees did not get honey enough to finish them. During all that time they remained just as they were at the end of the basswood harvest but when the fall flowers bloomed they were finished in a few days. I think the bees prefer to store the various kinds of honey separate as you suggest, but I do not think they hesitate to mix the kinds when necessity demands it.

Possibly they may be more particular when the apiarist is feeding back for the purpose of having incomplete sections filled out. That is an experiment I have not tried.

Audubon, Iowa.

How to get all the Wax out of old Combs.

C. H. DIBBERN.

I have long been perplexed, how to get about all the wax out of old tough combs. When combs are new or broken bits or cappings, it is easy enough, as there is then not the great mass of refuse to get rid of. Now some one will say "why not use a sun extractor?" I have one, and like it very well, but it will *not* extract nearly all the wax from old comb. I have also tried about all the methods of boiling, and steaming that I have seen described in the different bee-papers during the last dozen years: but with about the same results: much wax was wasted. I have visited other beekeepers and talked this matter over with them, and examined the refuse they had thrown away, and generally found that about one-third of the wax was lost. I am fully convinced that many thousands of dollars are annually lost to the beekeepers of the United States in this way.

I will now describe the method finally hit upon. Take a box about two by three feet nearly water tight, and turn it upside down, on a solid foundation near a tree or building. The box should be a foot or more in depth. Nail cleats on the inside about six inches from the bottom, and make a slatted false bottom to lay on these cleats. Nail a cleat to the tree or building against which your box is to stand. Get a strong plank twelve or fourteen feet long and a block that will easily fit inside the box. Your wax press is now ready for business.

Take the old combs or refuse from the sun extractor, which should be saved up during the summer, and place it in the boiler and boil thoroughly. Now get a good strong burlap sack, one that has had binder twine in is just the thing, and place it on the slatted bottom in the box, and dip the contents of the boiler into it. Twist the open end of sack and tie it. Now place the block on the sack, and the plank on that, letting the end come under the cleat nailed to the building or tree. Place a weight on the other end of the plank sufficient to press the sacks as much as it will safely stand. Put some more water in the boiler, place it on the stove and by the time it comes to the boiling point, there will be but little wax coming out of the sack. Place the sack in the boiler and let it boil a while, then put it in the press again, and if thought necessary, put on more water to repeat the operation. Two or three squeezes will get the wax out clean, and I believe no process without pressing will do it. The wax will cool readily on the top of the water in the box, and can then be run into cakes in the sun extractor if desired. The refuse still left can be spread out on boards and dried in the sun, and will make excellent material for starting fires.

Milan, Ill.

Uses of honey.

In all ages honey has been used for many purposes. The Ancient Britons used it to make mead, and this drink continued to be much used hundreds of years after them. When malt liquors became popular, and when sugar was introduced, the uses of honey went down for a time, but of late years it has gone up again with a bound. Honey is largely used in the manufacture of honey chocolate creams and honey chocolate tablets. There is a delicious taste of the honey in these articles, but they are so judiciously blended with the other materials that they are not too sweet. Honey is also now largely used by the confectioners in the place of sugar in many kinds of lozenges, cough drops and other sweetmeats. Glycerine and honey jujubes for the throat, corn and honey food, herbal tablets, etc., are only a few of the many things which might be mentioned. The toilet is not left out, as it is used in soap and dentifrice. Doctors use it very largely for many purposes, and many doctors are amongst our most successful beekeepers, and thus the purity of their medicines may be guaranteed. There are many persons who are not allowed to use sugar at all; to these honey comes as a boon. It is a curious thing to note that even the angler now uses honey, and natural honey fish bait is put down in the list of necessaries for the nodern complete angler. What would old Isaac Walton say to this?— *Exchange.*

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THIRTY YEARS AMONG THE BEES.

BY HENRY ALLEY.

QUEEN-REARING.

[*Continued from page* 208.]

Two strong colonies were removed from their hives and placed in the swarm-boxes. When they had been confined about two hours and seemed anxious to be released and in the right condition to commence cell building, the nucleus hives were prepared and the bees released. Of course they took immediate possession of their new homes. Having a surplus of queens at hand one was placed over an aperture in the top of the hive, and covered to keep the bees from clustering thereon. This had the effect to pacify and quiet the bees and all indications of queenlessness soon disappeared. At night the queens are removed and cell building will proceed.

While the bees seem to be aware of the presence of the queen about the hive, they are not satisfied with that state of things and commence to construct cells about the eggs given them. The presence of the queen is the means of preventing the uneasy bees from destroying the eggs.

The results of such experiments were most pleasing to me, and I consider this plan of cell building a marked improvement over the previous method given.

By this plan the bees can be removed from a hive and by the time the proper preparation can be made the bees are in condition for cell building. No time is lost. Let me illustrate. We will suppose that one of the best colonies is at work in the sections. That is a good one to select for rearing queens. The bees are placed in the swarm-box, and in the course of two hours those bees can be at work again not only in gathering honey, but at building queen cells. In less than three hours from the time that that colony was disturbed the bees are all in the field and at work again as smart as ever.

By the old plan the bees were confined in the swarm ten hours and the entire day in honey gathering was lost to them.

If those who have tested the former methods as given in the Beekeepers' Handy Book will try this one, they will readily appreciate the great improvement in respect to confining the bees in the swarm-box.

Considering that bees must be kept in a queenless condition for some little time before they are ready to commence cell building, this latter method must be considered by far the best one to adopt.

Box-hives and modern bee culture.

In the former editions of the Beekeepers' Handy Book, are given directions for using bees for cell building that are in box-hives. At this advanced age of apiculture one would be considered far behind the times should he even mention the words box-hive. The old box-hive man is so far in the rear that his way of doing and managing bees is not to be mentioned or thought of. Therefore, all the advice and methods here given are intended to apply to modern beekeeping and to movable-comb hives especially.

Controlling bees with smoke.

Now let us suppose we have selected for cell building a colony as above described. They have been fastened in the hive by one of the screens mentioned on another page, and the bees have been taken to the bee-room. It is well-known that the smoke of punk (rotten wood) will prevent bees stinging, but has no effect to prevent them from

taking wing. Now, to make bees stay on the combs or in a box when brushing from the combs into one, I have found nothing better than a small amount of tobacco smoke. As it is inconvenient to use a small, common pipe for a bee-smoker, I devised a tin one. This pipe, fig. 2, has a wooden stopper in each end, and a small tin tube in one end through which the smoke is directed to the bees. This smoker is made of light material and is held between the teeth while the hands are at liberty. It is called a fumigator. The fuel used

FIG. 2. *The Alley fumigator.*

is cigar clippings which may be obtained of any tobacconist at about 20 cents per pound. This quality of tobacco is used as it has the least strength of any manufactured. *It will not do to use strong smoking tobacco about bees.*

While the bees are confined in the hive a small amount of smoke is blown in among them. It is important to have all the bees feel the effect of the smoke, and in order to do that some ten or fifteen minutes should be spent in drumming on the hive and smoking the bees. Only a small quantity of smoke should be introduced at a time. When the bees seem to be getting quiet they are left alone several minutes. Then the honey-board, or whatever is used to cover the frames is removed and the adhering bees shaken from it into a box. (The box I use is the cap to a Langstroth hive.) The combs are taken out, each one examined for the queen, then the bees are brushed into the box.

As it is sometimes necessary to replace the combs in the hive in the original position, I usually mark them across the the top-bar at the back end with a nail or pencil.

If the bees attempt to fly out or crawl up the sides of the box, the fumigator is directed that way and a small quantity of smoke will keep them quiet and at the bottom of the box. Occasionally brush them down the sides of the box and but few of them will attempt to get out of it or to fly.

As the combs are cleaned of bees they are stood on one end and leaned against some object. In doing this the frames of brood should be so placed that the brood of one frame will not touch that in another frame. Should it do so and remain in that position long it would be destroyed.

So place the combs that there will be a circulation of air about them. There is no danger of the brood chilling if the temperature of the room stands at 50°. In cool weather the room should be warmed so that it will be comfortable to one with his coat off; as it is much easier handling bees in a fairly warm temperature.

Finding the queen.

If the queen is not found as the combs are looked over, it will be necessary to examine the bees in the box. Unless readily found, I generally take a thin piece of wood, say a piece about four inches long, two inches wide and an eighth of an inch thick, and push the bees, a few at a time, towards one end of the box. As I do so, they are turned over so as to bring the bottom ones to the top. If the queen is not found by one such operation, repeat it. When found and caged, the bees are at once placed in the swarm-box.

Disposing of brood.

If a large number of queens are to be reared, it will be necessary to treat several colonies as above, say about two each day until the number to be used for cell-building is in operation. It will be necessary, of course, to dispose of the brood taken from these colonies. My plan is this: all the combs that have only capped brood in them are placed in the weakest colonies, and the uncapped brood is given the strong colonies; thus it will be seen that a large amount of brood is easily disposed of to the best advantage if there are thirty

or more colonies in the apiary, and no one should attempt to rear queens with a less number.

By distributing the brood of six or seven full hives as above, some very strong stocks of bees will be the result in a short time.

To make the matter so that all will understand it we will suppose that six or more colonies have been working on queen cells and that the cells are capped. Just at this time it is necessary to start more cells, as it will not do to let even one day pass by without preparing for more or less queens, that is, if one intends to fill his orders promptly and also keep a good supply of queens on hand. Now, proceed as follows: brush all the bees from the combs of another hive; replace the combs and take the hive to a stand that is occupied by one of those used for cell-building; remove the latter a few feet ahead and place the former in its place; remove several of the combs from the hive having the cells (not those combs having the cells on them) and shake several quarts of bees from them in front of the empty hive. As they run in, let a fertile queen go in with them. When all, or about all, the bees are in, a little smoke should be blown in the hive at the entrance, as that will prevent the bees from molesting or killing the new queen.

The combs on which the cells are built, with the adhering bees, may be transferred to a smaller hive, and if not located too far from the former stand, the bees will not desert the cells. To be sure that the cells are being properly protected, the hive should be examined occasionally. If the cells are not well covered, more bees should be added. Thus, it will be seen that by managing the apiary as above, but few colonies need be broken up to start the season, and after the first preparation no colonies need be kept queenless.

If a more practical plan for rearing queens in large numbers or on a more economical scale has been advanced by any one it has not come to my notice.

Not a "fussy" method.

Though this method may seem rather "fussy" and troublesome when reading it, yet it is not at all so, as hundreds have stated who have tested it.

There is but one method for rearing queens of which I have any knowledge that is better than this one, and that is the one by which queens are reared in full colonies without removing or even disturbing the queen. By that method no colonies are made queenless at any time; neither is it necessary to disturb but one comb in the brood-chamber. Though this latter plan is a practical one, yet it will require more or less experience in order to make it successful at all times.

I never saw a person who could take hold of anything with which he had had no previous knowledge and make it a success. Practice and experience are the requisites of success in any undertaking or enterprise. And certainly one must have considerable training and experience in order to succeed in anything connected with bee culture.

Placing the bees in the swarm box.

I will now go back and take up again the subject of queen-rearing. We had proceeded so far as to get the bees in a receptacle ready to "dump" into the swarm box.

Before the combs from which the bees have just been taken are placed in the hive and made ready to remove to the stand, the bees should be cared for. Jar them down into the bottom of the box and then strike the box endwise on the floor to force the bees into more compact quarters. Then at once turn them into the swarm-box as one would turn a quantity of corn from one box into another.

Place the box in a cool place until the bees realize their queenless condition, which will require not far from two hours.

How to prepare the nucleus.

A nucleus hive adapted to three standard Langstroth frames should then be

prepared. Two combs, one of which should contain several pounds of honey, and a quantity of fresh pollen are placed in the hive. One must be certain that there are no eggs or larvæ in any of the cells of the combs used, as if even one cell contains an egg the bees will certainly utilize it from which to rear a queen, and if a young larva is present in any cell, a queen would most likely be reared from that. If a queen is reared from the latter she would be likely to "hatch" several days before the queens are due that would be reared from the eggs given. The result would be the destruction of all the cells built from the eggs placed in the hive, unless they were removed several days before they are matured sufficiently to be handled with safety.

This illustrates the difficulty that is sure to attend the operations of a careless person who undertakes queen rearing. Such a person ought not to adopt the bee business, anyway.

If the same combs are used in the cell-building hives all the season, there will be no danger of "unknown" eggs in them.

Do bees remove eggs from one cell to another?

It is often said that bees remove eggs from one cell to another, and from one comb to another, and then rear queens from such eggs. I am certain nothing of the kind ever has happened in my apiary, and it seems to me that no bees ever have had a greater opportunity to remove eggs and thus prove the correctness of such statements than I have given them in my methods of queen rearing the past quarter of a century.

I have never known the bees to construct queen cells except from the eggs given them and in the location they were placed. The old and commonplace methods for rearing queens as given in nearly all the bee papers and standard works on bee culture of the present day are well known to those who take an interest in bee matters, and I need not repeat them here, and certainly will not unjustly criticise them. Those methods were the best and most practical known until within a few years. Many dealers in queens practise them to-day and seem to succeed to a certain extent, yet they were not satisfactory to me nor could I rear queens by them in sufficient numbers to fill the orders that would come in by every mail. Then again, the cost in bees and labor by those methods was an item worth considering, and I found most too much night work to suit me about those ancient ways of producing queens.

Building cells in clusters.

As a matter of course the reader understands that by such methods queen cells are built in clusters as illustrated in figure 3. And it must be evident

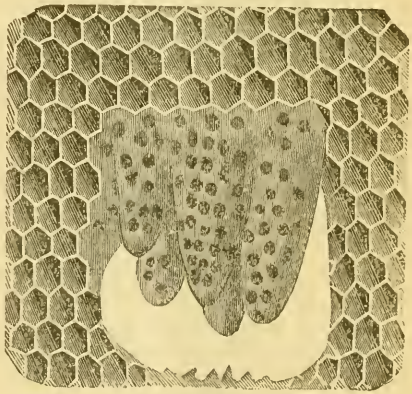

FIG. 3. *The old way of having cells built.*

to all that it is impossible to separate the cells built in that way without destroying many of them. When this is the case, how is it possible to rear queens and make the business a success? Here is another point that comes up here. The number of queen cells that are likely to be built is very uncertain. A strong colony when properly prepared to rear queens by the days-gone-by methods may build five cells and they may build a dozen cells, there is always existing an uncertainty about it, and those who rear queens by the old

methods know there is a great uncertainty, too, as to the time when the young are likely to emerge from cells thus built. This is due in a great measure in not being positive as to the time when the queen deposited the eggs.

Eggs—time required to hatch them.

It requires three and a half days from the time the egg is placed in the cell for it to hatch or the minute larva to appear. Well, now suppose a comb containing eggs is given the bees to rear queens from. That comb may have more or less eggs in it that were laid that day and other eggs that were deposited three days previously. Bees when forced to rear a queen never select an egg, but always a larva if it is to be found in the hive. As other larvæ are developed more cells are begun, and so on for about four days in succession. Thus it can be seen that when the young queens begin to emerge they will continue to appear each day, for three days in succession. This illustrates the importance of removing the eggs each day from the hive. After queen cells have been capped several days, not even an expert can tell in *all* cases from which ones the queens are most likely to come first. Hence the uncertainty regarding the time to look for the young queens.

Not only is the above a most serious objection to rearing queens by the old methods, but others equally as objectionable can be advanced.

Night work in queen-rearing.

As stated on a previous page, the night work that is necessary in order to save young queens from being destroyed either before or after they leave the cell, is more than a person can endure who has worked hard during the day, and I was actually compelled to devise some better method for rearing queens.

Before adopting the present plan now practised in the Bay State Apiary for rearing queens, I think I did more work during the night than I did in the daytime. The night work was to watch queen cells, and as soon as a queen emerged, she was at once removed to prevent her from destroying other queens, or the remaining cells. This work was necessary from the fact that the cells were so constructed that they could not be separated without destroying a large number of them. It really seemed as though queen-bees could not be born except in the night, as by far the largest per cent of all I reared seemed to appear between sunset and sunrise. Such operations as watching queen cells at night and removing queens are now numbered with the things of the past.

After practising all the known methods as given in many of the books devoted to bee culture and the methods as recommended by the most prominent apiarists of the world as published in the several bee-publications, it occurred to me that I had travelled in those old ruts as long as necessary.

How to avoid the night work was the one thing that with advancing years I must in some way overcome. Just how it was to be done required not a little study and considerable experimenting. However, I succeeded in devising a plan for compelling bees to construct queen cells in such a way that *all* could be separated without injuring those adjoining.

Those experiments were conducted many years ago, yet nothing new on this particular point of having queen cells built in rows has been devised, while in all other particulars connected with queen-rearing, much advancement has been made, as will be noticed as we proceed.

Starting the cells.

The plan I shall describe for having queen cells built in rows, as illustrated farther on, was devised and first practised in the Bay State Apiary some ten years ago. Since it was made public, several foreign queen dealers, of more or less note, have adopted it and claim it as an invention of their own. Some noted English authors of bee-literature have coolly informed their readers that they do not agree with me in all I claim in

the several editions of the Beekeepers' Handy Book, notwithstanding the fact that hundreds of people have visited the Bay State Apiary and seen these doubtful things in actual operation.

The plan for having the bees build queen cells as hinted on the foregoing pages and which have been practised so many years by some of the best queen dealers, is really the only one that comes nearest to nature in any degree outside of natural swarming. In fact, many of the queens reared by my methods are superior to those reared under the swarming impulse. This, of course, some few people will doubt, yet the queens can be produced that will speak for themselves.

I have no idea that all who read this work will agree with me in all that is claimed. That would be too much to expect. Yet what is herein stated is worthy of the attention of those who keep bees either for pleasure or profit. I am giving no theory, but actual facts.

Rearing queens by large quantities.

While the first plan given here for producing queens relates more particularly to rearing them on a *large* scale, nevertheless it will be found one of the best, even though only a small number of queens are to be reared.

Many of those who will read this have been made acquainted through the "Handy Book" with the details of preparing the combs and eggs for starting cells, yet it is necessary to give them again, as hundreds of those who now read the AMERICAN APICULTURIST do not have the least idea regarding the best methods practised for rearing queens.

Preparing the comb and eggs for queen cells; necessary tools and fixtures to have at hand.

When ready to set the bees to building cells, one of the combs that was removed from the hive in which the breeding queen is kept, is taken to a warm room which had been previously prepared for quickly doing the necessary work. There is at hand an oil-stove, and an iron pan, say one that is twelve inches long, six inches wide and not less than three inches deep, in which is a quantity of beeswax and rosin, which should be sufficiently heated to have the material mix thoroughly.

An old table-knife, one having a very thin blade and made quite sharp is one of the most convenient and handy tools that I have in the apiary. This is used for cutting foundation or comb of any kind. A knife for such a purpose will work nicely if warmed.

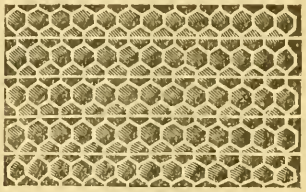

FIG. 4. *Comb containing eggs.*

A quantity of hot water should be at hand to dip the knife in occasionally. When not convenient to have the water, the blade of the knife may be warmed by the blaze of a kerosene lamp.

Now we are ready to cut the comb from the frame. Bear in mind that the last eggs deposited by the queen are those near the edge of the comb, and in order not to take them, the comb is cut half an inch from the frame. After warming the knife again, the comb is cut in strips through each alternate row of cells as indicated by the lines in fig. 4. When this has been done the pieces are laid flatwise upon a board, or on the table, and about half of the cell is cut off as illustrated farther on. The knife should be very warm and sharp, or the ends of the cells would be made so ragged that the bees would be apt to remove the comb entire and no cells would be made.

[*To be continued.*]

By the Manager.

Smokers at reduced prices.

We have in stock about twenty $2\frac{1}{2}$ inch Bingham smokers that will be sold at the low price of one dollar each, and mailed free of postage; or the APICULTURIST will be sent from October 1, 1888, to January 1, 1890, and one smoker by mail for $1.50.

This size smoker is the best made. Send in the order at once, as they will not last long at the low price placed upon them.

Reduced prices on Supplies.

We have a few goods left over from last season which will be sold at the following low prices:—

	Red. price.	Reg. price.
Drone-traps, per doz.	$2.75	$3.50
" " " ½ doz.	1.65	2.00
Queen-nursery, by mail,	1.25	1.60
Queen-rearing apparatus, . . .	3.50	4.50
Bay State Bee-hive,	2.75	3.00
" " " in flat,	2.25	2.50

Giving credit.

We have a large amount of money owing us for goods sent out during the season of 1888.

Statements have been mailed to all and about five per cent of the amount due has been received. But by far the largest majority to whom bills were sent have, up to date, failed to notice them.

Below is the response that came from the friends of one customer, but no name was signed.

DEAR SIR: ——— ——— is dead and there is nothing left for any body and you had better save your postage. Yours truly,

Nothing very encouraging in the above, yet we are glad to hear from even a dead man. You can bet that the advice "to save your postage" will be heeded.

This response reminds us of what the darkey preacher said after his hat was passed among his congregation and was returned with "narry red" in it: "Golly, wasn't I lucky to git de hat back?"

I am quite sure that several other customers are dead and equally sure that they left no friends to tell the sad tale to their poor creditors, as some of them wrote thus when the goods were ordered: "Please send me ——— and I will remit by return mail." No remittance; cause—sudden death and no friends.

But to be serious about this matter, friends, I shall be compelled to offer for sale, in our January issue, to the highest bidder, the bills we hold against certain parties, unless paid before Dec. 20, 1888.

There are several persons whose crooked transactions with the APICULTURIST will be shown up; if, for no other reason, it will prevent other dealers from being swindled on account of ignorance of not knowing the reputation of certain people who order goods and promise to pay and then fail to do so or to make any reply when a statement is sent.

Thirty years among the bees.

The series of papers begun in the November issue under the head, "Thirty Years Among the Bees," will be continued through 1889 and well into the year 1890.

These articles will be profusely illustrated and every branch of beekeeping will be treated. It is the intention of the author to give in detail the *practical* side of bee culture as he has found it in his thirty years experience.

When these papers are finished and bound in one volume, they will form one of the most practical and interesting works devoted to beekeeping.

Renew, renew.

The subscription of a large number of our subscribers will expire with this issue. We specially invite all to renew. If the cash is not at hand when you read this, just send in the request to continue and remit at a more convenient time.

To all who will renew before Jan. 1, 1889, and send one or more new subscribers with the cash, the API will be sent for sixty-five cents per year. *This offer holds good only till Jan.* 1, 1889.

Bee-hives.

In the January issue we shall tell our readers all about "Bee-hives." That number will be nearly all taken with articles on that subject from the pens of Dr. Tinker, G. W. Demaree, J. E. Pond, R. L. Taylor, J. M. Hamburg, George F. Robbins, A. C. Tyrrell and several other well-known writers on bee matters.

These articles will furnish very interesting reading for the expert as well as for the novice.